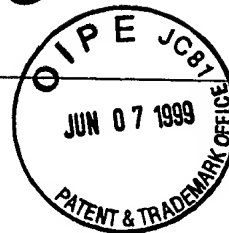


#16/E



SEQUENCE LISTING

<110> GOODEARL, ANDREW
STROOBANT, PAUL
MINGHETTI, LUISA
WATERFIELD, MICHAEL
MARCHIONNI, MARK
CHEN, MARIO S.
HILES, IAN

<120> GLIAL MITOGENIC FACTORS, THEIR
PREPARATION AND USE

<130> 04585/00200R

<140> 08/734,592
<141> 1996-10-22

<150> 08/472,008
<151> 1995-06-06

<150> 08/036,555
<151> 1993-03-24

<150> 07/965,173
<151> 1992-10-23

<150> 07/940,389
<151> 1992-09-03

<150> 07/907,138
<151> 1992-06-30

<150> 07/863,703
<151> 1992-04-03

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<210> 1
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<400> 1
Phe Lys Gly Asp Ala His Thr Glu
1 5

<210> 2

<211> 13
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<213> Bos taurus

<220>
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<222> (1)...(12)
<223> Xaa in position 1 is Lysine or Arginine; Xaa in
position 12 is unknown.

<400> 2
Xaa Ala Ser Leu Ala Asp Glu Tyr Glu Tyr Met Xaa Lys
1 5 10

<210> 3
<211> 12
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (1)...(10)
<223> Xaa in position 1 is Lysine or Arginine; Xaa in
position 10 is unknown

<400> 3
Xaa Thr Glu Thr Ser Ser Ser Gly Leu Xaa Leu Lys
1 5 10

<210> 4
<211> 9
<212> PRT
<213> Bos taurus

<220>
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<223> Xaa in position 1 is Lysine or Arginine.

<400> 4
Xaa Lys Leu Gly Glu Met Trp Ala Glu
1 5

<210> 5
<211> 7
<212> PRT
<213> Bos taurus

<220>
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<222> (1)...(1)

<223> Xaa in position 1 is Lysine or Arginine.

<400> 5

Xaa Leu Gly Glu Lys Arg Ala
1 5

<210> 6

<211> 16

<212> PRT

<213> Bos taurus

<220>

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<222> (1)...(1)

<223> Xaa in position 1 is Lysine or Arginine.

<400> 6

Xaa Ile Lys Ser Glu His Ala Gly Leu Ser Ile Gly Asp Thr Ala Lys
1 5 10 15

<210> 7

<211> 13

<212> PRT

<213> Bos taurus

<220>

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<222> (1)...(1)

<223> Xaa in position 1 is Lysine or Arginine.

<400> 7

Xaa Ala Ser Leu Ala Asp Glu Tyr Glu Tyr Met Arg Lys
1 5 10

<210> 8

<211> 16

<212> PRT

<213> Bos taurus

<220>

<221> UNSURE

<222> (1)...(1)

<223> Xaa in position 1 is Lysine or Arginine.

<400> 8

Xaa Ile Lys Gly Glu His Pro Gly Leu Ser Ile Gly Asp Val Ala Lys
1 5 10 15

<210> 9

<211> 13

<212> PRT

<213> Bos taurus

<220>

<221> UNSURE

<222> (1)...(12)

<223> Xaa in position 1 is Lysine or Arginine; Xaa in position 12 is unknown.

<400> 9

Xaa	Met	Ser	Glu	Tyr	Ala	Phe	Phe	Val	Gln	Thr	Xaa	Arg
1					5						10	

<210> 10

<211> 14

<212> PRT

<213> Bos taurus

<220>

<221> UNSURE

<222> (1)...(1)

<223> Xaa in position 1 is Lysine or Arginine.

<400> 10

Xaa	Ser	Glu	His	Pro	Gly	Leu	Ser	Ile	Gly	Asp	Thr	Ala	Lys
1				5						10			

<210> 11

<211> 10

<212> PRT

<213> Bos taurus

<220>

<221> UNSURE

<222> (1)...(8)

<223> Xaa in position 1 is Lysine or Arginine; Xaa in position 8 is unknown.

<400> 11

Xaa	Ala	Gly	Tyr	Phe	Ala	Glu	Xaa	Ala	Arg
1				5					10

<210> 12

<211> 9

<212> PRT

<213> Bos taurus

<220>

<221> UNSURE

<222> (1)...(7)

<223> Xaa in position 1 is Lysine or Arginine; Xaa in position 7 is unknown.

<400> 12
Xaa Lys Leu Glu Phe Leu Xaa Ala Lys
1 5

<210> 13
<211> 11
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (1)...(1)
<223> Xaa in position 1 is Lysine or Arginine

<400> 13
Xaa Thr Thr Glu Met Ala Ser Glu Gln Gly Ala
1 5 10

<210> 14
<211> 10
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (1)...(1)
<223> Xaa in position 1 is Lysine or Arginine

<400> 14
Xaa Ala Lys Glu Ala Leu Ala Ala Leu Lys
1 5 10

<210> 15
<211> 8
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (1)...(1)
<223> Xaa in position 1 is Lysine or Arginine

<400> 15
Xaa Phe Val Leu Gln Ala Lys Lys
1 5

<210> 16
<211> 6
<212> PRT
<213> Bos taurus

<220>
 <221> UNSURE
 <222> (1)...(1)
 <223> Xaa in position 1 is Lysine or Arginine

<400> 16
 Xaa Leu Gly Glu Met Trp
 1 5

<210> 17
 <211> 16
 <212> PRT
 <213> Bos taurus

<400> 17
 Glu Tyr Lys Cys Leu Lys Phe Lys Trp Phe Lys Lys Ala Thr Val Met
 1 5 10 15

<210> 18
 <211> 10
 <212> PRT
 <213> Bos taurus

<220>
 <221> UNSURE
 <222> (8)...(8)
 <223> Xaa in position 8 is unknown.

<400> 18
 Glu Ala Lys Tyr Phe Ser Lys Xaa Asp Ala
 1 5 10

<210> 19
 <211> 7
 <212> PRT
 <213> Bos taurus

<220>
 <221> UNSURE
 <222> (2)...(2)
 <223> Xaa in position 2 is unknown.

<400> 19
 Glu Xaa Lys Phe Tyr Val Pro
 1 5

<210> 20
 <211> 26
 <212> PRT
 <213> Bos taurus

<400> 20
 Glu Leu Ser Phe Ala Ser Val Arg Leu Pro Gly Cys Pro Pro Gly Val
 1 5 10 15
 Asp Pro Met Val Ser Phe Pro Val Ala Leu
 20 25

<210> 21
 <211> 2003
 <212> DNA
 <213> Homo sapiens

<220>
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 tttctgtggt tccatccact tcttccccct cctcctccca taaacaactc tcctaccocct 120
 gcacccccaa taaataaata aaaggaggag ggcaaggggg gaggaggagg agtggtgctg 180
 cgaggggaag gaaaagggag gcagcgcgag aagagccggg cagagtccga accgacagcc 240
 agaagcccgc acgcacctcg cacc atg aga tgg cga cgc gcc ccg cgc cgc 291
 Met Arg Trp Arg Arg Ala Pro Arg Arg
 1 5
 tcc ggg cgt ccc ggc ccc cgg gcc cag cgc ccc ggc tcc gcc gcc cgc 339
 Ser Gly Arg Pro Gly Pro Arg Ala Gln Arg Pro Gly Ser Ala Ala Arg
 10 15 20 25
 tcg tcg ccg ccg ctg ccg ctg ctg cca cta ctg ctg ctg ctg ggg acc 387
 Ser Ser Pro Pro Leu Pro Leu Leu Pro Leu Leu Leu Leu Gly Thr
 30 35 40
 gcg gcc ctg gcg ccg ggg gcg gcg gcc ggc aac gag gcg gct ccc gcg 435
 Ala Ala Leu Ala Pro Gly Ala Ala Ala Gly Asn Glu Ala Ala Pro Ala
 45 50 55
 ggg gcc tcg gtg tgc tac tcg tcc ccg ccc agc gtg gga tcg gtg cag 483
 Gly Ala Ser Val Cys Tyr Ser Ser Pro Pro Ser Val Gly Ser Val Gln
 60 65 70
 gag cta gct cag cgc gcc gcg gtg gtc atc gag gga aag gtg cac ccg 531
 Glu Leu Ala Gln Arg Ala Ala Val Val Ile Glu Gly Lys Val His Pro
 75 80 85
 cag cgg cgg cag cag ggg gca ctc gac agg aag gcg gcg gcg gcg gcg 579
 Gln Arg Arg Gln Gln Gly Ala Leu Asp Arg Lys Ala Ala Ala Ala Ala
 90 95 100 105
 ggc gag gca ggg gcg tgg ggc ggc gat cgc gag ccg cca gcc gcg ggc 627
 Gly Glu Ala Gly Ala Trp Gly Gly Asp Arg Glu Pro Pro Ala Ala Gly
 110 115 120

cca cgg gcg ctg ggg ccg ccc gcc gag gag ccg ctg ctc gcc gcc aac Pro Arg Ala Leu Gly Pro Pro Ala Glu Glu Pro Leu Leu Ala Ala Asn 125 130 135	675
ggg acc gtg ccc tct tgg ccc acc gcc ccg gtg ccc agc gcc ggc gag Gly Thr Val Pro Ser Trp Pro Thr Ala Pro Val Pro Ser Ala Gly Glu 140 145 150	723
ccc ggg gag gag gcg ccc tat ctg gtg aag gtg cac cag gtg tgg gcg Pro Gly Glu Glu Ala Pro Tyr Leu Val Lys Val His Gln Val Trp Ala 155 160 165	771
gtg aaa gcc ggg ggc ttg aag aag gac tcg ctg ctc acc gtg cgc ctg Val Lys Ala Gly Gly Leu Lys Lys Asp Ser Leu Leu Thr Val Arg Leu 170 175 180 185	819
ggg acc tgg ggc cac ccc gcc ttc ccc tcc tgc ggg agg ctc aag gag Gly Thr Trp Gly His Pro Ala Phe Pro Ser Cys Gly Arg Leu Lys Glu 190 195 200	867
gac agc agg tac atc ttc ttc atg gag ccc gac gcc aac agc acc agc Asp Ser Arg Tyr Ile Phe Phe Met Glu Pro Asp Ala Asn Ser Thr Ser 205 210 215	915
cgc gcg ccg gcc gcc ttc cga gcc tct ttc ccc cct ctg gag acg ggc Arg Ala Pro Ala Ala Phe Arg Ala Ser Phe Pro Pro Leu Glu Thr Gly 220 225 230	963
cgg aac ctc aag aag gag gtc agc cgg gtg ctg tgc aag cgg tgc gcc Arg Asn Leu Lys Lys Glu Val Ser Arg Val Leu Cys Lys Arg Cys Ala 235 240 245	1011
ttg cct ccc caa ttg aaa gag atg aaa agc cag gaa tcg gct gca ggt Leu Pro Pro Gln Leu Lys Glu Met Lys Ser Gln Glu Ser Ala Ala Gly 250 255 260 265	1059
tcc aaa cta gtc ctt cgg tgt gaa acc agt tct gaa tac tcc tct ctc Ser Lys Leu Val Leu Arg Cys Glu Thr Ser Ser Glu Tyr Ser Ser Leu 270 275 280	1107
aga ttc aag tgg ttc aag aat ggg aat gaa ttg aat cga aaa aac aaa Arg Phe Lys Trp Phe Lys Asn Gly Asn Glu Leu Asn Arg Lys Asn Lys 285 290 295	1155
cca caa aat atc aag ata caa aaa aag cca ggg aag tca gaa ctt cgc Pro Gln Asn Ile Lys Ile Gln Lys Lys Pro Gly Lys Ser Glu Leu Arg 300 305 310	1203
att aac aaa gca tca ctg gct gat tct gga gag tat atg tgc aaa gtg Ile Asn Lys Ala Ser Leu Ala Asp Ser Gly Glu Tyr Met Cys Lys Val 1251	

315	320	325	
atc agc aaa tta gga aat gac agt gcc tct gcc aat atc acc atc gtg			1299
Ile Ser Lys Leu Gly Asn Asp Ser Ala Ser Ala Asn Ile Thr Ile Val			
330	335	340	345
gaa tca aac gct aca tct aca tcc acc act ggg aca agc cat ctt gta			1347
Glu Ser Asn Ala Thr Ser Thr Ser Thr Thr Gly Thr Ser His Leu Val			
	350	355	360
aaa tgt gcg gag aag gag aaa act ttc tgt gtg aat gga ggg gag tgc			1395
Lys Cys Ala Glu Lys Glu Lys Thr Phe Cys Val Asn Gly Gly Glu Cys			
	365	370	375
ttc atg gtg aaa gac ctt tca aac ccc tcg aga tac ttg tgc aag tgc			1443
Phe Met Val Lys Asp Leu Ser Asn Pro Ser Arg Tyr Leu Cys Lys Cys			
	380	385	390
cca aat gag ttt act ggt gat cgc tgc caa aac tac gta atg gcc agc			1491
Pro Asn Glu Phe Thr Gly Asp Arg Cys Gln Asn Tyr Val Met Ala Ser			
	395	400	405
ttc tac agt acg tcc act ccc ttt ctg tct ctg cct gaa taggagcatg			1540
Phe Tyr Ser Thr Ser Thr Pro Phe Leu Ser Leu Pro Glu			
410	415	420	
ctcagttggt gctgctttct tgttgctgca tctccctca gattccacct agagctagat			1600
gtgtcttacc agatctaata ttgactgcct ctgcctgtcg catgagaaca ttaacaaaag			1660
caattgtatt acttcctctg ttcgcgacta gttggtctcg agatactaata aggtgtgtga			1720
ggctccggat gtttctggaa ttgatattga atgatgtgat acaaattgat agtcaatatc			1780
aagcagtgaa atatgataat aaaggcattt caaagtctca cttttattga taaaataaaa			1840
atcattctac tgaacagtcc atcttcttta tacaatgacc acatcctgaa aagggtgttg			1900
ctaagctgta accgatatgc acttgaaatg atggtaagtt aattttgatt cagaatgtgt			1960
tatttgtcac aaataaacat aataaaaagga aaaaaaaaaa aaa			2003

<210> 22

<211> 12

<212> PRT

<213> Bos taurus

<220>

<221> UNSURE

<222> (11)...(11)

<223> Xaa in position 11 is unknown.

<400> 22

Ala	Ser	Leu	Ala	Asp	Glu	Tyr	Glu	Tyr	Met	Xaa	Lys
1				5						10	

<210> 23

<211> 11

<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (9)...(9)
<223> Xaa in position 9 is unknown.

<400> 23
Thr Glu Thr Ser Ser Ser Gly Leu Xaa Leu Lys
1 5 10

<210> 24
<211> 12
<212> PRT
<213> Bos taurus

<400> 24
Ala Ser Leu Ala Asp Glu Tyr Glu Tyr Met Arg Lys
1 5 10

<210> 25
<211> 9
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (7)...(7)
<223> Xaa in position 7 is unknown.

<400> 25
Ala Gly Tyr Phe Ala Glu Xaa Ala Arg
1 5

<210> 26
<211> 10
<212> PRT
<213> Bos taurus

<400> 26
Thr Thr Glu Met Ala Ser Glu Gln Gly Ala
1 5 10

<210> 27
<211> 9
<212> PRT
<213> Bos taurus

<400> 27
Ala Lys Glu Ala Leu Ala Ala Leu Lys

1

5

<210> 28
 <211> 7
 <212> PRT
 <213> Bos taurus

<400> 28

Phe Val Leu Gln Ala Lys Lys
 1 5

<210> 29
 <211> 21
 <212> PRT
 <213> Bos taurus

<400> 29

Glu Thr Gln Pro Asp Pro Gly Gln Ile Leu Lys Lys Val Pro Met Val
 1 5 10 15
 Ile Gly Ala Tyr Thr
 20

<210> 30
 <211> 21
 <212> PRT
 <213> Homo sapiens

<220>

<221> UNSURE

<222> (1)...(19)

<223> Xaa in positions 1, 3, 17 and 19 is unknown.

<400> 30

Xaa Glu Xaa Lys Glu Gly Arg Gly Lys Gly Lys Gly Lys Lys Lys Glu
 1 5 10 15
 Xaa Gly Xaa Gly Lys
 20

<210> 31
 <211> 13
 <212> PRT
 <213> Homo sapiens

<400> 31

Ala Glu Lys Glu Lys Thr Phe Cys Val Asn Gly Gly Glu
 1 5 10

<210> 32
 <211> 8
 <212> PRT
 <213> Bos taurus

<220>
 <221> UNSURE
 <222> (6)...(6)
 <223> Xaa in position 6 is unknown.

 <400> 32
 Lys Leu Glu Phe Leu Xaa Ala Lys
 1 5

 <210> 33
 <211> 9
 <212> PRT
 <213> Bos taurus

 <220>
 <221> UNSURE
 <222> (1)...(1)
 <223> Xaa in position 1 is Lysine or Arginine.

 <400> 33
 Xaa Val His Gln Val Trp Ala Ala Lys
 1 5

 <210> 34
 <211> 14
 <212> PRT
 <213> Bos taurus

 <220>
 <221> UNSURE
 <222> (1)...(11)
 <223> Xaa in position 1 is Lysine or Arginine; Xaa in 11
 is unknown.

 <400> 34
 Xaa Tyr Ile Phe Phe Met Glu Pro Glu Ala Xaa Ser Ser Gly
 1 5 10

 <210> 35
 <211> 14
 <212> PRT
 <213> Bos taurus

 <220>
 <221> UNSURE
 <222> (1)...(13)
 <223> Xaa in 1 is Lysine or Arginine; Xaa in 13 is
 unknown.

 <400> 35
 Xaa Leu Gly Ala Trp Gly Pro Pro Ala Phe Pro Val Xaa Tyr

1 5 10

<210> 36
<211> 9
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (1)...(1)
<223> Xaa in position 1 is Lysine or Arginine.

<400> 36
Xaa Trp Phe Val Val Ile Glu Gly Lys
1 5

<210> 37
<211> 16
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (1)...(1)
<223> Xaa in position 1 is Lysine or Arginine.

<400> 37
Xaa Ala Ser Pro Val Ser Val Gly Ser Val Gln Glu Leu Val Gln Arg
1 5 10 15

<210> 38
<211> 13
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE
<222> (1)...(1)
<223> Xaa in position 1 is Lysine or Arginine.

<400> 38
Xaa Val Cys Leu Leu Thr Val Ala Ala Leu Pro Pro Thr
1 5 10

<210> 39
<211> 7
<212> PRT
<213> Bos taurus

<220>
<221> UNSURE

<222> (1)...(6)

<223> Xaa in position 1 is Lysine or Arginine; Xaa in position 6 is unknown.

<400> 39

Xaa Asp Leu Leu Leu Xaa Val

1

5

<210> 40

<211> 39

<212> PRT

<213> Bos taurus

<400> 40

Cys Thr Cys Gly Cys Cys Lys Cys Cys Arg Thr Thr Cys Ala Cys Arg

1

5

10

15

Cys Ala Gly Ala Ala Gly Gly Thr Cys Thr Thr Cys Thr Cys Cys Thr

20

25

30

Thr Cys Thr Cys Ala Gly Cys

35

<210> 41

<211> 24

<212> PRT

<213> Bos taurus

<400> 41

Cys Cys Thr Cys Gly Cys Thr Cys Cys Thr Thr Cys Thr Thr Cys Thr

1

5

10

15

Thr Gly Cys Cys Cys Thr Thr Cys

20

<210> 42

<211> 60

<212> DNA

<213> Homo sapiens

<400> 42

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60

<210> 43

<211> 36

<212> DNA

<213> Homo sapiens

<400> 43

agtaagtgcca ctccctttct gtctctgcct gaatag

36

<210> 44

<211> 569

<212> DNA

<213> Homo sapiens

<400> 44

aaggcggagg	agctgtacca	gaagagagtg	ctgaccataa	ccggcatctg	catcgccctc	60
cttggtggtcg	gcatcatgtg	tgtggtggcc	tactgcaaaa	ccaagaaaca	gcggaaaaag	120
ctgcatgacc	gtcttcggca	gagccttcgg	tctgaacgaa	acaatatgat	gaacattgcc	180
aatgggcctc	accatcctaa	cccaccccc	gagaatgtcc	agctggtgaa	tcaatacgta	240
tctaaaaacg	tcattctccag	tgagcatatt	gttgagagag	aagcagagac	atccttttcc	300
accagtcact	atacttccac	agcccatcac	tccactactg	tcaccagac	tcctagccac	360
agctggagca	acggacacac	tgaaagcatc	ctttccgaaa	gccactctgt	aatcgtgatg	420
tcattccgtag	aaaacagtag	gcacagcagc	ccaactgggg	gcccaagagg	acgtcttaat	480
ggcacaggag	gccttcgtga	atgtaacagc	ttcctcaggc	atgccagaga	aacctctgat	540
tcctaccgag	actctctca	tagtgaaag				569

<210> 45

<211> 8

<212> PRT

<213> Bos taurus

<400> 45

Val	His	Gln	Val	Trp	Ala	Ala	Lys
1				5			

<210> 46

<211> 13

<212> PRT

<213> Bos taurus

<220>

<221> UNSURE

<222> (10)...(10)

<223> Xaa in position 10 is unknown.

<400> 46

Tyr	Ile	Phe	Phe	Met	Glu	Pro	Glu	Ala	Xaa	Ser	Ser	Gly
1				5					10			

<210> 47

<211> 13

<212> PRT

<213> Bos taurus

<220>

<221> UNSURE

<222> (12)...(12)

<223> Xaa in position 12 is unknown.

<400> 47

Leu	Gly	Ala	Trp	Gly	Pro	Pro	Ala	Phe	Pro	Val	Xaa	Tyr
1				5					10			

<210> 48
 <211> 8
 <212> PRT
 <213> Bos taurus

 <400> 48
 Trp Phe Val Val Ile Glu Gly Lys
 1 5

 <210> 49
 <211> 15
 <212> PRT
 <213> Bos taurus

 <400> 49
 Ala Ser Pro Val Ser Val Gly Ser Val Gln Glu Leu Val Gln Arg
 1 5 10 15

 <210> 50
 <211> 12
 <212> PRT
 <213> Bos taurus

 <400> 50
 Val Cys Leu Leu Thr Val Ala Ala Leu Pro Pro Thr
 1 5 10

 <210> 51
 <211> 9
 <212> PRT
 <213> Bos taurus

 <400> 51
 Lys Val His Gln Val Trp Ala Ala Lys
 1 5

 <210> 52
 <211> 13
 <212> PRT
 <213> Bos taurus

 <220>
 <221> UNSURE
 <222> (12)...(12)
 <223> Xaa in position 12 is unknown.

 <400> 52
 Lys Ala Ser Leu Ala Asp Ser Gly Glu Tyr Met Xaa Lys
 1 5 10

 <210> 53

<211> 6
 <212> PRT
 <213> Bos taurus

 <220>
 <221> UNSURE
 <222> (5)...(5)
 <223> Xaa in position 5 is unknown.

 <400> 53
 Asp Leu Leu Leu Xaa Val
 1 5

 <210> 54
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Degenerate probe/primer derived from Bos taurus or
 Homo sapiens

 <400> 54
 ttyaarggng aygcncayac

 <210> 55
 <211> 21
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Degenerate probe/primer derived from Bos taurus or
 Homo sapiens

 <400> 55
 catrtaytcr taytcrtcng c

 <210> 56
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Degenerate probe/primer derived from Bos taurus or
 Homo sapiens

 <400> 56
 tgytcngang ccatytcngt

 <210> 57
 <211> 20

20

21

20

<212> DNA
 <213> Artificial Sequence

 <220>
 <223> Degenerate probe/primer derived from Bos taurus or
 Homo sapiens

 <400> 57
 tgytcrctng ccatytcngt 20

 <210> 58
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Degenerate probe/primer derived from Bos taurus or
 Homo sapiens

 <400> 58
 ccdatnacca tnggnacytt 20

 <210> 59
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Degenerate probe/primer derived from Bos taurus or
 Homo sapiens

 <400> 59
 gcngcccana cytgtrgnac 20

 <210> 60
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Degenerate probe/primer derived from Bos taurus or
 Homo sapiens

 <400> 60
 gcytcnggyt ccatraaraa 20

 <210> 61
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Degenerate probe/primer derived from Bos taurus or
 Homo sapiens

<400> 61
 ccytc datna cnacraacca

<210> 62
 <211> 17
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Degenerate probe/primer derived from Bos taurus or
 Homo sapiens

<400> 62
 tcngcraart anccngc

<210> 63
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Degenerate probe/primer derived from Bos taurus or
 Homo sapiens

<400> 63
 gcngcnagn cytcttngc

<210> 64
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Degenerate probe/primer derived from Bos taurus or
 Homo sapiens

<400> 64
 gcngcyaang cytcttngc

<210> 65
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Degenerate probe/primer derived from Bos taurus or
 Homo sapiens

<400> 65	
ttyttngcyt gnagnacraa	20
<210> 66	
<211> 20	
<212> DNA	
<213> Artificial Sequence	
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<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens	
<400> 66	
ttyttngcyt gyaanacraa	20
<210> 67	
<211> 17	
<212> DNA	
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<400> 67	
tgnacnagyt cytgnac	17
<210> 68	
<211> 17	
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<400> 68	
tgnacyaayt cytgnac	17
<210> 69	
<211> 21	
<212> DNA	
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<400> 69	
catrtaytcn ccngartcng c	21

<210> 70
 <211> 21
 <212> DNA
 <213> Artificial Sequence

 <220>
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 Homo sapiens

 <400> 70
 catrtaytcn ccrctrctng c

21

<210> 71
 <211> 21
 <212> DNA
 <213> Artificial Sequence

 <220>
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 Homo sapiens

 <400> 71
 ngartcngcy aangangcyt t

21

<210> 72
 <211> 21
 <212> DNA
 <213> Artificial Sequence

 <220>
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 Homo sapiens

 <400> 72
 ngartcngcn agngangcyt t

21

<210> 73
 <211> 21
 <212> DNA
 <213> Artificial Sequence

 <220>
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 Homo sapiens

 <400> 73
 rctrctngcy aangangcyt t

21

<210> 74
 <211> 21
 <212> DNA

<213> Artificial Sequence

<220>

<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 74
rctrctngcn agngangcyt t 21

<210> 75
<211> 21
<212> DNA
<213> Artificial Sequence

<220>

<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 75
ngartcngcy aarctngcyt t 21

<210> 76
<211> 21
<212> DNA
<213> Artificial Sequence

<220>

<223> Degenerate probe/primer derived from Bos taurus or Homo sapiens

<400> 76
ngartcngcn agrctngcyt t 21

<210> 77
<211> 730
<212> DNA
<213> Homo sapiens

<400> 77

gtatgtgtca	gccatgacca	ccccggctcg	tatgtcacct	gtagatttcc	acacgccaag	60
ctcccccaa	tgcgccctt	cggaaatgtc	tccaccctg	tccagcatga	cgggtgtccat	120
gccttccatg	gcggtcagcc	ccttcattga	agaagagaga	cctctacttc	tcgtgacacc	180
accaaggctg	cgggagaaga	agtttgacca	tcaccctcag	cagttcagct	ccttccacca	240
caaccccgcg	catgacagta	acagcctccc	tgctagcccc	ttgaggatag	tggaggatga	300
ggagtatgaa	acgacccaag	agtagcagcc	agcccaagag	cctgttaaga	aactcgccaa	360
tagccggcgg	gccaaaagaa	ccaagcccaa	tggccacatt	gctaacagat	tgggaagtga	420
cagcaacaca	agctcccaga	gcagtaactc	agagagtga	acagaagatg	aaagagtagg	480
tgaagatacg	cctttcctgg	gcatacagaa	ccccctggca	gccagtcttg	aggcaacacc	540
tgccttccgc	ctggctgaca	gcaggactaa	cccagcaggc	cgttctcga	cacaggaaga	600
aatccaggcc	aggctgtcta	gtgtaattgc	taaccaagac	cctattgctg	tataaaacct	660
aaataaacac	atagattcac	ctgtaaaact	ttattttata	taataaagta	ttccacctta	720

aattaaacaa	730
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<210> 79 <211> 21 <212> DNA <213> Artificial Sequence <220> <223> Degenerate probe/primer derived from Bos taurus or Homo sapiens <400> 79 rctrctngcn agrctngcyt t	21
<210> 80 <211> 20 <212> DNA <213> Artificial Sequence <220> <223> Degenerate probe/primer derived from Bos taurus or Homo sapiens <400> 80 acnacngara tggctcnnga	20
<210> 81 <211> 20 <212> DNA <213> Artificial Sequence <220> <223> Degenerate probe/primer derived from Bos taurus or Homo sapiens <400> 81 acnacngara tggcagynga	20
<210> 82	

<211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Degenerate probe/primer derived from Bos taurus or
 Homo sapiens

 <400> 82
 caycargtnt gggcngcnaa 20

 <210> 83
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Degenerate probe/primer derived from Bos taurus or
 Homo sapiens

 <400> 83
 ttygtngtna thgarggnaa 20

 <210> 84
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Degenerate probe/primer derived from Bos taurus or
 Homo sapiens

 <400> 84
 aarggngayg cncayacnga 20

 <210> 85
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Degenerate probe/primer derived from Bos taurus or
 Homo sapiens

 <400> 85
 gargcnytn gngcnytnaa 20

 <210> 86
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Degenerate probe/primer derived from Bos taurus or
 Homo sapiens

<400> 86
 gtnggntcng tncargaryt 20

<210> 87
 <211> 20
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Degenerate probe/primer derived from Bos taurus or
 Homo sapiens

<400> 87
 gtnggnagyg tncargaryt 20

<210> 88
 <211> 21
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Degenerate probe/primer derived from Bos taurus or
 Homo sapiens

<400> 88
 nacyttytn ardatytn c 21

<210> 89
 <211> 417
 <212> DNA
 <213> Bos taurus

<220>
 <221> CDS
 <222> (6)...(416)

<221> unsure
 <222> (14)...(135)
 <223> Xaa in positions 14, 23, 90, 100, 126, and 135 is
 unknown.

<400> 89
 tctaa aac tac aga gac tgt att ttc atg atc atc ata gtt ctg nnn aat 50
 Asn Tyr Arg Asp Cys Ile Phe Met Ile Ile Ile Val Leu Xaa Asn
 1 5 10 15

ata ctt aaa ccg ctt tgg tcc nnn tct tgt agg aag tca gaa ctt cgc 98

Ile Leu Lys Pro Leu Trp Ser Xaa Ser Cys Arg Lys Ser Glu Leu Arg	
20 25 30	
att agc aaa gcg tca ctg gct gat tct gga gaa tat atg tgc aaa gtg	146
Ile Ser Lys Ala Ser Leu Ala Asp Ser Gly Glu Tyr Met Cys Lys Val	
35 40 45	
atc agc aaa cta gga aat gac agt gcc tct gcc aac atc acc att gtg	194
Ile Ser Lys Leu Gly Asn Asp Ser Ala Ser Ala Asn Ile Thr Ile Val	
50 55 60	
gag tca aac ggt aag aga tgc cta ctg cgt gct att tct cag tct cta	242
Glu Ser Asn Gly Lys Arg Cys Leu Leu Arg Ala Ile Ser Gln Ser Leu	
65 70 75	
aga gga gtg atc aag gta tgt ggt cac act nnn atc acg cag gtg tct	290
Arg Gly Val Ile Lys Val Cys Gly His Thr Xaa Ile Thr Gln Val Ser	
80 85 90 95	
gaa atc tca ttg nnn aca aat aaa aat cat gaa agg aaa act cta tgt	338
Glu Ile Ser Leu Xaa Thr Asn Lys Asn His Glu Arg Lys Thr Leu Cys	
100 105 110	
ttg aaa tat ctt atg ggt cct cct gta aag ctc ttc act cca nnn ggt	386
Leu Lys Tyr Leu Met Gly Pro Pro Val Lys Leu Phe Thr Pro Xaa Gly	
115 120 125	
gaa ata gac ctg aaa tat ata nnn att att t	417
Glu Ile Asp Leu Lys Tyr Ile Xaa Ile Ile	
130 135	

<210> 90
 <211> 33
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Degenerate primer derived from Bos taurus

<221> modified_base
 <222> (19)...(19)
 <223> I

<221> modified_base
 <222> (25)...(25)
 <223> I

<221> modified_base
 <222> (31)...(31)

<223> I
 <400> 90
 ccgaattctg caggaracnc arccngaycc ngg
 <210> 91
 <211> 37
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> Degenerate primer derived from Bos taurus

33

<221> modified_base
 <222> (14)...(14)
 <223> I

<221> modified_base
 <222> (20)...(20)
 <223> I

<221> modified_base
 <222> (23)...(23)
 <223> I

<221> modified_base
 <222> (29)...(29)
 <223> I

<221> modified_base
 <222> (35)...(35)
 <223> I

<400> 91
 aaggatcctg cagngtrtan gcnccdatna ccatngg

37

<210> 92
 <211> 34
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Degenerate primer derived from Bos taurus

<221> modified_base
 <222> (16)...(16)
 <223> I

<221> modified_base

<222> (22)...(22)

<223> I

<221> modified_base

<222> (25)...(25)

<223> I

<400> 92

ccgaattctg caggcngayt cnggngarta yatg

34

<210> 93

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Degenerate primer derived from Bos taurus

<221> modified_base

<222> (16)...(16)

<223> I

<221> modified_base

<222> (25)...(25)

<223> I

<400> 93

ccgaattctg caggcngaya gyggngarta yat

33

<210> 94

<211> 34

<212> DNA

<213> Artificial Sequence

<220>

<223> Degenerate primer derived from Bos taurus

<221> modified_base

<222> (14)...(14)

<223> I

<221> modified_base

<222> (15)...(15)

<223> I

<221> modified_base

<222> (16)...(16)

<223> I

<221> modified_base

<222> (26)...(26)
 <223> I

 <221> modified_base
 <222> (29)...(29)
 <223> I

 <400> 94
 aaggatcctg cagnnncatr taytcnccng artc

34

<210> 95
 <211> 34
 <212> DNA
 <213> Artificial Sequence

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 <223> Degenerate primer derived from Bos taurus

 <221> modified_base
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 <223> I

 <221> modified_base
 <222> (15)...(15)
 <223> I

 <221> modified_base
 <222> (16)...(16)
 <223> I

 <221> modified_base
 <222> (26)...(26)
 <223> I

<400> 95
 aaggatcctg cagnnncatr taytcnccrc trtc

34

<210> 96
 <211> 33
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Degenerate primer derived from Bos taurus

 <221> modified_base
 <222> (22)...(22)
 <223> I

 <221> modified_base
 <222> (28)...(28)

<223> I

<221> modified_base

<222> (31)...(31)

<223> I

<400> 96

ccgaattctg cagcaycarg tntgggcngc naa

33

<210> 97

<211> 35

<212> DNA

<213> Artificial Sequence

<220>

<223> Degenerate primer derived from Bos taurus

<221> modified_base

<222> (31)...(31)

<223> I

<400> 97

ccgaattctg cagathhtyt tyatggarcc ngarg

35

<210> 98

<211> 35

<212> DNA

<213> Artificial Sequence

<220>

<223> Degenerate primer derived from Bos taurus

<221> modified_base

<222> (18)...(18)

<223> I

<221> modified_base

<222> (21)...(21)

<223> I

<221> modified_base

<222> (24)...(24)

<223> I

<221> modified_base

<222> (27)...(27)

<223> I

<221> modified_base

<222> (33)...(33)

<223> I

<400> 98
ccgaattctg caggggggncc nccngcntty ccngt

35

<210> 99
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<221> modified_base
<222> (22)...(22)
<223> I

<221> modified_base
<222> (25)...(25)
<223> I

<400> 99
ccgaattctg cagtgggtyg tngtnathga rgg

33

<210> 100
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<221> modified_base
<222> (17)...(17)
<223> I

<221> modified_base
<222> (20)...(20)
<223> I

<221> modified_base
<222> (27)...(27)
<223> I

<400> 100
aaggatcctg cagyttnngcn ngcccanacy tgrtg

35

<210> 101
<211> 33
<212> DNA
<213> Artificial Sequence

<220>

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<223> Degenerate primer derived from Bos taurus

<221> modified_base
<222> (19)...(19)
<223> I

<400> 101
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33

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<210> 102
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<221> modified_base
<222> (16)...(16)
<223> I

<221> modified_base
<222> (22)...(22)
<223> I

<221> modified_base
<222> (25)...(25)
<223> I

<221> modified_base
<222> (28)...(28)
<223> I

<221> modified_base
<222> (31)...(31)
<223> I

<400> 102
aaggatcctg cagacnggra angcnggngg ncc

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33

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<210> 103
<211> 35
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<221> modified_base
<222> (17)...(17)
<223> I

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    <221> modified_base
    <222> (26)...(26)
    <223> I

    <221> modified_base
    <222> (29)...(29)
    <223> I

    <400> 103
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35

    <210> 104
    <211> 33
    <212> DNA
    <213> Artificial Sequence

    <220>
    <223> Degenerate primer derived from Bos taurus

    <221> modified_base
    <222> (18)...(18)
    <223> I

    <400> 104
catrtaytcr taytctcngc aaggatcctg cag
33

    <210> 105
    <211> 33
    <212> DNA
    <213> Artificial Sequence

    <220>
    <223> Degenerate primer derived from Bos taurus

    <221> modified_base
    <222> (19)...(19)
    <223> I

    <221> modified_base
    <222> (25)...(25)
    <223> I

    <221> modified_base
    <222> (31)...(31)
    <223> I

    <400> 105
ccgaattctg cagaarggng aygcncayac nga
33

    <210> 106
    <211> 33

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<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<221> modified_base
<222> (3)...(3)
<223> I

<221> modified_base
<222> (18)...(18)
<223> I

<400> 106
gcngcyaang cytcytnngc aaggatcctg cag

33

<210> 107
<211> 33
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<221> modified_base
<222> (3)...(3)
<223> I

<221> modified_base
<222> (6)...(6)
<223> I

<221> modified_base
<222> (9)...(9)
<223> I

<221> modified_base
<222> (18)...(18)
<223> I

<400> 107
gcngcnagng cytcytnngc aaggatcctg cag

33

<210> 108
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

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<221> modified_base
<222> (3)...(3)
<223> I

<221> modified_base
<222> (12)...(12)
<223> I

<221> modified_base
<222> (15)...(15)
<223> I

<400> 108
tcngcraart anccngcaag gatcctgcag 30

<210> 109
<211> 38
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<400> 109
catcgatctg caggctgatt ctggagaata tatgtgca 38

<210> 110
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<400> 110
aaggatcctg cagccacatc tcgagtcgac atcgatt 37

<210> 111
<211> 37
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<400> 111
ccgaattctg cagtgatcag caaactagga aatgaca 37

<210> 112
<211> 37
<212> DNA

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<213> Artificial Sequence
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 <223> Degenerate primer derived from Bos taurus
 <400> 112
 catcgatctg cagcctagtt tgctgatcac tttgcac 37
 <210> 113
 <211> 37
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> Degenerate primer derived from Bos taurus
 <400> 113
 aaggatcctg cagtatatcc tccagaatca gccagtg 37
 <210> 114
 <211> 34
 <212> DNA
 <213> Artificial Sequence
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 <223> Degenerate primer derived from Bos taurus
 <400> 114
 aaggatcctg caggcacgca gtaggcatct ctta 34
 <210> 115
 <211> 35
 <212> DNA
 <213> Artificial Sequence
 <220>
 <223> Degenerate primer derived from Bos taurus
 <400> 115
 ccgaattctg cagcagaact tcgcattagc aaagc 35
 <210> 116
 <211> 33
 <212> DNA
 <213> Artificial Sequence
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 <223> Degenerate primer derived from Bos taurus
 <400> 116
 catcccggga tgaagagtca ggagtctgtg gca 33

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<210> 117
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<400> 117
ataccggggc tgcagacaat gagatttcac acacctgcg
39

<210> 118
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<400> 118
aaggatcctg cagtttggaa cctgccacag actcct
36

<210> 119
<211> 39
<212> DNA
<213> Artificial Sequence

<220>
<223> Degenerate primer derived from Bos taurus

<400> 119
ataccggggc tgcagatgag atttcacaca cctgcgtga
39

<210> 120
<211> 12
<212> PRT
<213> Bos taurus

<400> 120
His Gln Val Trp Ala Ala Lys Ala Ala Gly Leu Lys
1          5          10

<210> 121
<211> 16
<212> PRT
<213> Bos taurus

<400> 121
Gly Gly Leu Lys Lys Asp Ser Leu Leu Thr Val Arg Leu Gly Ala Asn
1          5          10          15

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<210> 122
 <211> 13
 <212> PRT
 <213> Bos taurus

 <220>
 <221> UNSURE
 <222> (12)...(12)
 <223> Xaa in 12 is unknown.

 <400> 122
 Leu Gly Ala Trp Gly Pro Pro Ala Phe Pro Val Xaa Tyr
 1 5 10

 <210> 123
 <211> 23
 <212> PRT
 <213> Bos taurus

 <400> 123
 Leu Leu Thr Val Arg Leu Gly Ala Trp Gly His Pro Ala Phe Pro Ser
 1 5 10 15
 Cys Gly Arg Leu Lys Glu Asp
 20

 <210> 124
 <211> 13
 <212> PRT
 <213> Bos taurus

 <220>
 <221> UNSURE
 <222> (10)...(10)
 <223> Xaa in 10 is unknown.

 <400> 124
 Tyr Ile Phe Phe Met Glu Pro Glu Ala Xaa Ser Ser Gly
 1 5 10

 <210> 125
 <211> 23
 <212> PRT
 <213> Bos taurus

 <400> 125
 Lys Glu Asp Ser Arg Tyr Ile Phe Phe Met Glu Pro Glu Ala Asn Ser
 1 5 10 15
 Ser Gly Gly Pro Gly Arg Leu
 20

 <210> 126

<211> 14
 <212> PRT
 <213> Bos taurus

 <400> 126
 Val Ala Gly Ser Lys Leu Val Leu Arg Cys Glu Thr Ser Ser
 1 5 10

 <210> 127
 <211> 16
 <212> PRT
 <213> Bos taurus

 <400> 127
 Glu Tyr Lys Cys Leu Lys Phe Lys Trp Phe Lys Lys Ala Thr Val Met
 1 5 10 15

 <210> 128
 <211> 26
 <212> PRT
 <213> Bos taurus

 <400> 128
 Cys Glu Thr Ser Ser Glu Tyr Ser Ser Leu Lys Phe Lys Trp Phe Lys
 1 5 10 15
 Asn Gly Ser Glu Leu Ser Arg Lys Asn Lys
 20 25

 <210> 129
 <211> 13
 <212> PRT
 <213> Bos taurus

 <220>
 <221> UNSURE
 <222> (12)...(12)
 <223> Xaa in 12 is unknown.

 <400> 129
 Lys Ala Ser Leu Ala Asp Ser Gly Glu Tyr Met Xaa Lys
 1 5 10

 <210> 130
 <211> 23
 <212> PRT
 <213> Bos taurus

 <400> 130
 Glu Leu Arg Ile Ser Lys Ala Ser Leu Ala Asp Ser Gly Glu Tyr Met
 1 5 10 15
 Cys Lys Val Ile Ser Lys Leu

20

<210> 131
<211> 12
<212> PRT
<213> Bos taurus

<400> 131
Ala Ser Leu Ala Asp Glu Tyr Glu Tyr Met Arg Lys
1 5 10

<210> 132
<211> 22
<212> PRT
<213> Bos taurus

<400> 132
Leu Arg Ile Ser Lys Ala Ser Leu Ala Asp Ser Gly Glu Tyr Met Cys
1 5 10 15
Lys Val Ile Ser Lys Leu
20

<210> 133
<211> 744
<212> DNA
<213> Bos taurus

<220>
<221> CDS
<222> (8)...(625)

<400> 133
cctgcag cat caa gtg tgg gcg gcg aaa gcc ggg ggc ttg aag aag gac 49
His Gln Val Trp Ala Ala Lys Ala Gly Gly Leu Lys Lys Asp
1 5 10
tcg ctg ctc acc gtg cgc ctg ggc gcc tgg ggc cac ccc gcc ttc ccc 97
Ser Leu Leu Thr Val Arg Leu Gly Ala Trp Gly His Pro Ala Phe Pro
15 20 25 30
tcc tgc ggg cgc ctc aag gag gac agc agg tac atc ttc ttc atg gag 145
Ser Cys Gly Arg Leu Lys Glu Asp Ser Arg Tyr Ile Phe Phe Met Glu
35 40 45
ccc gag gcc aac agc agc ggc ggg ccc ggc cgc ctt ccg agc ctc ctt 193
Pro Glu Ala Asn Ser Ser Gly Gly Pro Gly Arg Leu Pro Ser Leu Leu
50 55 60
ccc ccc tct cga gac ggg ccg gaa cct caa gaa gga ggt cag ccg ggt 241
Pro Pro Ser Arg Asp Gly Pro Glu Pro Gln Glu Gly Gly Gln Pro Gly
65 70 75

gct gtg caa cgg tgc gcc ttg cct ccc cgc ttg aaa gag atg aag agt	289
Ala Val Gln Arg Cys Ala Leu Pro Pro Arg Leu Lys Glu Met Lys Ser	
80 85 90	

cag gag tct gtg gca ggt tcc aaa cta gtg ctt cgg tgc gag acc agt	337
Gln Glu Ser Val Ala Gly Ser Lys Leu Val Leu Arg Cys Glu Thr Ser	
95 100 105 110	

tct gaa tac tcc tct ctc aag ttc aag tgg ttc aag aat ggg agt gaa	385
Ser Glu Tyr Ser Ser Leu Lys Phe Lys Trp Phe Lys Asn Gly Ser Glu	
115 120 125	

tta agc cga aag aac aaa cca gaa aac atc aag ata cag aaa agg ccg	433
Leu Ser Arg Lys Asn Lys Pro Glu Asn Ile Lys Ile Gln Lys Arg Pro	
130 135 140	

ggg aag tca gaa ctt cgc att agc aaa gcg tca ctg gct gat tct gga	481
Gly Lys Ser Glu Leu Arg Ile Ser Lys Ala Ser Leu Ala Asp Ser Gly	
145 150 155	

gaa tat atg tgc aaa gtg atc agc aaa cta gga aat gac agt gcc tct	529
Glu Tyr Met Cys Lys Val Ile Ser Lys Leu Gly Asn Asp Ser Ala Ser	
160 165 170	

gcc aac atc acc att gtg gag tca aac ggt aag aga tgc cta ctg cgt	577
Ala Asn Ile Thr Ile Val Glu Ser Asn Gly Lys Arg Cys Leu Leu Arg	
175 180 185 190	

gct att tct cag tct cta aga gga gtg atc aag gta tgt ggt cac act	625
Ala Ile Ser Gln Ser Leu Arg Gly Val Ile Lys Val Cys Gly His Thr	
195 200 205	

tgaatcacgc aggtgtgtga aatctcattg tcaacaaata aaaatcatga aaggaaaaaa	685
aaaaaaaaaa aatcgatgtc gactcgagat gtggctgcag gtcgactcta gaggatccc	744

<210> 134
 <211> 1193
 <212> DNA
 <213> Bos taurus

<220>
 <221> CDS
 <222> (8)...(796)

<400> 134	
cctgcag cat caa gtg tgg gcg gcg aaa gcc ggg ggc ttg aag aag gac	49
His Gln Val Trp Ala Ala Lys Ala Gly Gly Leu Lys Lys Asp	
1 5 10	

tgc ctg ctc acc gtg cgc ctg ggc gcc tgg ggc cac ccc gcc ttc ccc	97
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Ser	Leu	Leu	Thr	Val	Arg	Leu	Gly	Ala	Trp	Gly	His	Pro	Ala	Phe	Pro		
15					20					25					30		
tcc	tgc	ggg	cgc	ctc	aag	gag	gac	agc	agg	tac	atc	ttc	ttc	atg	gag	145	
Ser	Cys	Gly	Arg	Leu	Lys	Glu	Asp	Ser	Arg	Tyr	Ile	Phe	Phe	Met	Glu		
				35				40						45			
ccc	gag	gcc	aac	agc	agc	ggc	ggg	ccc	ggc	cgc	ctt	ccg	agc	ctc	ctt	193	
Pro	Glu	Ala	Asn	Ser	Ser	Gly	Gly	Pro	Gly	Arg	Leu	Pro	Ser	Leu	Leu		
			50					55					60				
ccc	ccc	tct	cga	gac	ggg	ccg	gaa	cct	caa	gaa	gga	ggt	cag	ccg	ggt	241	
Pro	Pro	Ser	Arg	Asp	Gly	Pro	Glu	Pro	Gln	Glu	Gly	Gly	Gln	Pro	Gly		
		65					70					75					
gct	gtg	caa	cgg	tgc	gcc	ttg	cct	ccc	cgc	ttg	aaa	gag	atg	aag	agt	289	
Ala	Val	Gln	Arg	Cys	Ala	Leu	Pro	Pro	Arg	Leu	Lys	Glu	Met	Lys	Ser		
	80					85					90						
cag	gag	tct	gtg	gca	ggt	tcc	aaa	cta	gtg	ctt	cgg	tgc	gag	acc	agt	337	
Gln	Glu	Ser	Val	Ala	Gly	Ser	Lys	Leu	Val	Leu	Arg	Cys	Glu	Thr	Ser		
	95				100					105					110		
tct	gaa	tac	tcc	tct	ctc	aag	ttc	aag	tgg	ttc	aag	aat	ggg	agt	gaa	385	
Ser	Glu	Tyr	Ser	Ser	Leu	Lys	Phe	Lys	Trp	Phe	Lys	Asn	Gly	Ser	Glu		
				115					120					125			
tta	agc	cga	aag	aac	aaa	cca	gaa	aac	atc	aag	ata	cag	aaa	agg	ccg	433	
Leu	Ser	Arg	Lys	Asn	Lys	Pro	Glu	Asn	Ile	Lys	Ile	Gln	Lys	Arg	Pro		
			130					135					140				
ggg	aag	tca	gga	ctt	cgc	att	agc	aaa	gcg	tca	ctg	gct	gat	tct	gga	481	
Gly	Lys	Ser	Gly	Leu	Arg	Ile	Ser	Lys	Ala	Ser	Leu	Ala	Asp	Ser	Gly		
		145					150					155					
gaa	tat	atg	tgc	aaa	gtg	atc	agc	aaa	cta	gga	aat	gac	agt	gcc	tct	529	
Glu	Tyr	Met	Cys	Lys	Val	Ile	Ser	Lys	Leu	Gly	Asn	Asp	Ser	Ala	Ser		
	160					165					170						
gcc	aac	atc	acc	att	gtg	gag	tca	aac	gcc	aca	tcc	aca	tct	aca	gct	577	
Ala	Asn	Ile	Thr	Ile	Val	Glu	Ser	Asn	Ala	Thr	Ser	Thr	Ser	Thr	Ala		
	175				180					185					190		
ggg	aca	agc	cat	ctt	gtc	aag	tgt	gca	gag	aag	gag	aaa	act	ttc	tgt	625	
Gly	Thr	Ser	His	Leu	Val	Lys	Cys	Ala	Glu	Lys	Glu	Lys	Thr	Phe	Cys		
				195					200				205				
gtg	aat	gga	ggc	gag	tgc	ttc	atg	gtg	aaa	gac	ctt	tca	aat	ccc	tca	673	
Val	Asn	Gly	Gly	Glu	Cys	Phe	Met	Val	Lys	Asp	Leu	Ser	Asn	Pro	Ser		
			210					215					220				

aga tac ttg tgc aag tgc caa cct gga ttc act gga gcg aga tgt act	721
Arg Tyr Leu Cys Lys Cys Gln Pro Gly Phe Thr Gly Ala Arg Cys Thr	
225 230 235	
gag aat gtg ccc atg aaa gtc caa acc caa gaa agt gcc caa atg agt	769
Glu Asn Val Pro Met Lys Val Gln Thr Gln Glu Ser Ala Gln Met Ser	
240 245 250	
tta ctg gtg atc gct gcc aaa act acg taatggccag cttctacagt	816
Leu Leu Val Ile Ala Ala Lys Thr Thr	
255 260	
acgtccactc cctttctgtc tctgcctgaa tagcgcatct cagtcggtgc cgctttcttg	876
ttgccgcata tccccctcaga ttccctcctag agctagatgc gttttaccag gtctaacatt	936
gactgcctct gcctgtcgca tgagaacatt aacacaagcg attgtatgac ttccctctgtc	996
cgtagactagt gggctctgag ctactcgtag gtgcgtaagg ctccagtgtt tctgaaattg	1056
atcttgaatt actgtgatac gacatgatag tccctctcac ccagtgcaat gacaataaag	1116
gccttgaaaa gtcaaaaaaa aaaaaaaaaa aaaaaatcga tgtagactcg agatgtggct	1176
gcaggtagac tctagag	1193
<210> 135	
<211> 1108	
<212> DNA	
<213> Bos taurus	
<220>	
<221> CDS	
<222> (8) ... (778)	
<400> 135	
cctgcag cat caa gtg tgg gcg gcg aaa gcc ggg ggc ttg aag aag gac	49
His Gln Val Trp Ala Ala Lys Ala Gly Gly Leu Lys Lys Asp	
1 5 10	
tgc ctg ctc acc gtg cgc ctg ggc gcc tgg ggc cac ccc gcc ttc ccc	97
Ser Leu Leu Thr Val Arg Leu Gly Ala Trp Gly His Pro Ala Phe Pro	
15 20 25 30	
tcc tgc ggg cgc ctc aag gag gac agc agg tac atc ttc ttc atg gag	145
Ser Cys Gly Arg Leu Lys Glu Asp Ser Arg Tyr Ile Phe Phe Met Glu	
35 40 45	
ccc gag gcc aac agc agc ggc ggg ccc ggc cgc ctt ccg agc ctc ctt	193
Pro Glu Ala Asn Ser Ser Gly Gly Pro Gly Arg Leu Pro Ser Leu Leu	
50 55 60	
ccc ccc tct cga gac ggg ccg gaa cct caa gaa gga ggt cag ccg ggt	241
Pro Pro Ser Arg Asp Gly Pro Glu Pro Gln Glu Gly Gly Gln Pro Gly	
65 70 75	
gct gtg caa cgg tgc gcc ttg cct ccc cgc ttg aaa gag atg aag agt	289

Ala Val Gln Arg Cys Ala Leu Pro Pro Arg Leu Lys Glu Met Lys Ser	
80 85 90	
cag gag tct gtg gca ggt tcc aaa cta gtg ctt cgg tgc gag acc agt	337
Gln Glu Ser Val Ala Gly Ser Lys Leu Val Leu Arg Cys Glu Thr Ser	
95 100 105 110	
tct gaa tac tcc tct ctc aag ttc aag tgg ttc aag aat ggg agt gaa	385
Ser Glu Tyr Ser Ser Leu Lys Phe Lys Trp Phe Lys Asn Gly Ser Glu	
115 120 125	
tta agc cga aag aac aaa cca gaa aac atc aag ata cag aaa agg ccg	433
Leu Ser Arg Lys Asn Lys Pro Glu Asn Ile Lys Ile Gln Lys Arg Pro	
130 135 140	
ggg aag tca gaa ctt cgc att agc aaa gcg tca ctg gct gat tct gga	481
Gly Lys Ser Glu Leu Arg Ile Ser Lys Ala Ser Leu Ala Asp Ser Gly	
145 150 155	
gaa tat atg tgc aaa gtg atc agc aaa cta gga aat gac agt gcc tct	529
Glu Tyr Met Cys Lys Val Ile Ser Lys Leu Gly Asn Asp Ser Ala Ser	
160 165 170	
gcc aac atc acc att gtg gag tca aac gcc aca tcc aca tct aca gct	577
Ala Asn Ile Thr Ile Val Glu Ser Asn Ala Thr Ser Thr Ser Thr Ala	
175 180 185 190	
ggg aca agc cat ctt gtc aag tgt gca gag aag gag aaa act ttc tgt	625
Gly Thr Ser His Leu Val Lys Cys Ala Glu Lys Glu Lys Thr Phe Cys	
195 200 205	
gtg aat gga ggc gag tgc ttc atg gtg aaa gac ctt tca aat ccc tca	673
Val Asn Gly Gly Glu Cys Phe Met Val Lys Asp Leu Ser Asn Pro Ser	
210 215 220	
aga tac ttg tgc aag tgc cca aat gag ttt act ggt gat cgc tgc caa	721
Arg Tyr Leu Cys Lys Cys Pro Asn Glu Phe Thr Gly Asp Arg Cys Gln	
225 230 235	
aac tac gta atg gcc agc ttc tac agt acg tcc act ccc ttt ctg tct	769
Asn Tyr Val Met Ala Ser Phe Tyr Ser Thr Ser Thr Pro Phe Leu Ser	
240 245 250	
ctg cct gaa tagcgcatct cagtcggtgc cgctttcttg ttgccgcac	818
Leu Pro Glu	
255	
tccccacaga ttccgcctag agctagatgc gttttaccag gtctaacatt gactgcctct	878
gctgtgcga tgagaacatt aacacaagcg attgtatgac ttctctgtc cgtgactagt	938
gggctctgag ctactcgtag gtgcgtaagg ctccagtgtt tctgaaattg atcttgaatt	998
actgtgatac gacatgatag tccctctcac ccagtgcgaat gacaataaag gccttgaaaa	1058

gtcaaaaaaa aaaaaaaaaa aaaaatcgat gtcgactcga gatgtggctg

1108

<210> 136
 <211> 561
 <212> DNA
 <213> Bos taurus

<220>
 <221> CDS
 <222> (460)...(561)

<223> N in position 214 is unknown.

<221> variation
 <222> (560)...(560)
 <223> N in position 560 is c or is absent.

<221> variation
 <222> (561)...(561)
 <223> N in position 561 is c or is absent.

<221> variation
 <222> (34)...(34)
 <223> Xaa in position 34 is Ala or is absent.

<400> 136
 agtttcccc cccaacttgt cggaactctg ggctcgcgcg cagggcagga gcggagcggc 60
 ggcggctgcc caggcgatgc gagcgcgggc cggacggtaa tcgcctctcc ctctcgggc 120
 tgcgagcgcg ccggaccgag gcagcgacag gagcggaccg cggcgggaac cgaggactcc 180
 ccagcggcgc gccagcagga gccaccccgc gagnctgcg accgggacgg agcggccgcc 240
 agtcccaggt ggcccggacc gcacgttgcg tccccgcgct ccccgccggc gacaggagac 300
 gtcccccccc acgcgcgcgc cgctcgggc cggtcgcctg cccgcctcca ctccggggac 360
 aaacttttcc cgaagccgat ccagccctc ggacccaaac ttgtcgcgcg tcgccttcgc 420
 cgggagccgt ccgcgcagag cgtgcacttc tcgggcgag atg tcg gag cgc aga 474
 Met Ser Glu Arg Arg
 1 5

gaa ggc aaa ggc aag ggg aag ggc ggc aag aag gac cga ggc tcc ggg 522
 Glu Gly Lys Gly Lys Gly Lys Gly Gly Lys Lys Asp Arg Gly Ser Gly
 10 15 20

aag aag ccc gtg ccc gcg gct ggc ggc ccg agc cca gnn 561
 Lys Lys Pro Val Pro Ala Ala Gly Gly Pro Ser Pro Xaa
 25 30

<210> 137
 <211> 252
 <212> DNA
 <213> Bos taurus

<220>
 <221> CDS
 <222> (3)...(251)

<221> variation
 <222> (8)...(8)
 <223> N in position 8 varies.

<221> variation
 <222> (2)...(2)
 <223> Xaa in position 2 is Gln.

<400> 137
 cc cat can gtg tgg gcg gcg aaa gcc ggg ggc ttg aag aag gac tcg 47
 His Xaa Val Trp Ala Ala Lys Ala Gly Gly Leu Lys Lys Asp Ser
 1 5 10 15
 ctg ctc acc gtg cgc ctg ggc gcc tgg ggc cac ccc gcc ttc ccc tcc 95
 Leu Leu Thr Val Arg Leu Gly Ala Trp Gly His Pro Ala Phe Pro Ser
 20 25 30
 tgc ggg cgc ctc aag gag gac agc agg tac atc ttc ttc atg gag ccc 143
 Cys Gly Arg Leu Lys Glu Asp Ser Arg Tyr Ile Phe Phe Met Glu Pro
 35 40 45
 gag gcc aac agc agc ggc ggg ccc ggc cgc ctt ccg agc ctc ctt ccc 191
 Glu Ala Asn Ser Ser Gly Gly Pro Gly Arg Leu Pro Ser Leu Leu Pro
 50 55 60
 ccc tct cga gac ggg ccg gaa cct caa gaa gga ggt cag ccg ggt gct 239
 Pro Ser Arg Asp Gly Pro Glu Pro Gln Glu Gly Gly Gln Pro Gly Ala
 65 70 75
 gtg caa cgg tgc g 252
 Val Gln Arg Cys
 80

<210> 138
 <211> 179
 <212> DNA
 <213> Bos taurus

<220>
 <221> CDS
 <222> (3)...(179)
 <221> variation
 <222> (179)...(179)
 <223> N in position 179 is g or is absent.

<221> variation
 <222> (59)...(59)
 <223> Xaa in position 59 is Gly or is absent.

<400> 138
 cc ttg cct ccc cgc ttg aaa gag atg aag agt cag gag tct gtg gca 47
 Leu Pro Pro Arg Leu Lys Glu Met Lys Ser Gln Glu Ser Val Ala
 1 5 10 15
 ggt tcc aaa cta gtg ctt cgg tgc gag acc agt tct gaa tac tcc tct 95
 Gly Ser Lys Leu Val Leu Arg Cys Glu Thr Ser Ser Glu Tyr Ser Ser
 20 25 30
 ctc aag ttc aag tgg ttc aag aat ggg agt gaa tta agc cga aag aac 143
 Leu Lys Phe Lys Trp Phe Lys Asn Gly Ser Glu Leu Ser Arg Lys Asn
 35 40 45
 aaa cca caa aac atc aag ata cag aaa agg ccg ggn 179
 Lys Pro Gln Asn Ile Lys Ile Gln Lys Arg Pro Xaa
 50 55

<210> 139
 <211> 124
 <212> DNA
 <213> Bos taurus

<220>
 <221> CDS
 <222> (2)...(124)

<221> variation
 <222> (123)...(124)
 <223> N in positions 123 and 124 are both c, or are a
 and g, resepctively, or are absent.

<221> variation
 <222> (41)...(41)
 <223> Xaa in position 41 is Ala, Glu or absent.

<400> 139
 g aag tca gaa ctt cgc att agc aaa gcg tca ctg gct gat tct gga gaa 49
 Lys Ser Glu Leu Arg Ile Ser Lys Ala Ser Leu Ala Asp Ser Gly Glu
 1 5 10 15
 tat atg tgc aaa gtg atc agc aaa cta gga aat gac agt gcc tct gcc 97
 Tyr Met Cys Lys Val Ile Ser Lys Leu Gly Asn Asp Ser Ala Ser Ala
 20 25 30
 aac atc acc att gtg gag tca aac gnn 124
 Asn Ile Thr Ile Val Glu Ser Asn Xaa

40

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<220>
<221> CDS
<222> (84) ... (272)
```

```
tctaaaaacta cagagactgt attttcatga tcatcatagt tctgtgaaat atactttaaac    60
cgctttggtc ctgatcttgt agg aag tca gaa ctt cgc att agc aaa gcg tca    113
                Lys Ser Glu Leu Arg Ile Ser Lys Ala Ser
                1                5                10
```

ctg gct gat tct gga gaa tat atg tgc aaa gtg atc agc aaa cta gga 161
Leu Ala Asp Ser Gly Glu Tyr Met Cys Lys Val Ile Ser Lys Leu Gly
15 20 25

aat gac agt gcc tct gcc aac atc acc att gtg gag tca aac ggt aag 209
Asn Asp Ser Ala Ser Ala Asn Ile Thr Ile Val Glu Ser Asn Gly Lys
30 35 40

aga tgc cta ctg cgt gct att tct cag tct cta aga gga gtg atc aag 257
Arg Cys Leu Leu Arg Ala Ile Ser Gln Ser Leu Arg Gly Val Ile Lys
45 50 55

gta tgt ggt cac act tgaatcacgc aggtgtgtga aatctcattg tgaacaaata 312
Val Cys Gly His Thr
60

aaaatcatga aaggaaaact ctatgtttga aatatcttat gggctctcct gtaaagctct 372
tactccata aggtgaaata gacctgaaat atatatagat ttttt 417

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<220>  
<221> CDS  
<222> (1)...(102)
```

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<221> variation
<222> (1)...(1)
<223> N in position 1 varies.
```

<221> variation

<222> (1)...(1)

<223> Xaa in position 1 is Glu.

<400> 141

nag atc acc act ggc atg cca gcc tca act gag aca gcg tat gtg tct	48
Xaa Ile Thr Thr Gly Met Pro Ala Ser Thr Glu Thr Ala Tyr Val Ser	
1 5 10 15	

tca gag tct ccc att aga ata tca gta tca aca gaa gga aca aat act	96
Ser Glu Ser Pro Ile Arg Ile Ser Val Ser Thr Glu Gly Thr Asn Thr	
20 25 30	

tct tca t	103
Ser Ser	

<210> 142

<211> 69

<212> DNA

<213> Bos taurus

<220>

<221> CDS

<222> (1)...(69)

<400> 142

aag tgc caa cct gga ttc act gga gcg aga tgt act gag aat gtg ccc	48
Lys Cys Gln Pro Gly Phe Thr Gly Ala Arg Cys Thr Glu Asn Val Pro	
1 5 10 15	

atg aaa gtc caa acc caa gaa	69
Met Lys Val Gln Thr Gln Glu	
20	

<210> 143

<211> 60

<212> DNA

<213> Bos taurus

<220>

<221> CDS

<222> (1)...(60)

<400> 143

aag tgc cca aat gag ttt act ggt gat cgc tgc caa aac tac gta atg	48
Lys Cys Pro Asn Glu Phe Thr Gly Asp Arg Cys Gln Asn Tyr Val Met	
1 5 10 15	

gcc agc ttc tac	60
-----------------	----

Ala Ser Phe Tyr
20

<210> 144
<211> 36
<212> DNA
<213> Bos taurus

<220>
<221> CDS
<222> (1)...(33)

<400> 144
agt acg tcc act ccc ttt ctg tct ctg cct gaa tag 36
Ser Thr Ser Thr Pro Phe Leu Ser Leu Pro Glu
1 5 10

<210> 145
<211> 27
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)...(27)
<223>

<400> 145
aag cat ctt ggg att gaa ttt atg gag 27
Lys His Leu Gly Ile Glu Phe Met Glu
1 5

<210> 146
<211> 569
<212> DNA
<213> Bos taurus

<220>
<221> CDS
<222> (1)...(565)

<400> 146
aaa gcg gag gag ctc tac cag aag aga gtg ctc acc att acc ggc att 48
Lys Ala Glu Glu Leu Tyr Gln Lys Arg Val Leu Thr Ile Thr Gly Ile
1 5 10 15

tgc atc gcg ctg ctc gtg gtt ggc atc atg tgt gtg gtc tac tgc 96

Cys	Ile	Ala	Leu	Leu	Val	Val	Gly	Ile	Met	Cys	Val	Val	Val	Tyr	Cys	
			20					25					30			
aaa	acc	aag	aaa	caa	cgg	aaa	aag	ctt	cat	gac	cgg	ctt	cgg	cag	agc	144
Lys	Thr	Lys	Lys	Gln	Arg	Lys	Lys	Leu	His	Asp	Arg	Leu	Arg	Gln	Ser	
		35					40					45				
ctt	cgg	tct	gaa	aga	aac	acc	atg	atg	aac	gta	gcc	aac	ggg	ccc	cac	192
Leu	Arg	Ser	Glu	Arg	Asn	Thr	Met	Met	Asn	Val	Ala	Asn	Gly	Pro	His	
		50				55					60					
cac	ccc	aat	ccg	ccc	ccc	gag	aac	gtg	cag	ctg	gtg	aat	caa	tac	gta	240
His	Pro	Asn	Pro	Pro	Pro	Glu	Asn	Val	Gln	Leu	Val	Asn	Gln	Tyr	Val	
	65				70				75						80	
tct	aaa	aat	gtc	atc	tct	agc	gag	cat	att	gtt	gag	aga	gag	gcg	gag	288
Ser	Lys	Asn	Val	Ile	Ser	Ser	Glu	His	Ile	Val	Glu	Arg	Glu	Ala	Glu	
			85					90						95		
agc	tct	ttt	tcc	acc	agt	cac	tac	act	tcg	aca	gct	cat	cat	tcc	act	336
Ser	Ser	Phe	Ser	Thr	Ser	His	Tyr	Thr	Ser	Thr	Ala	His	His	Ser	Thr	
			100					105					110			
act	gtc	act	cag	act	ccc	agt	cac	agc	tgg	agc	aat	gga	cac	act	gaa	384
Thr	Val	Thr	Gln	Thr	Pro	Ser	His	Ser	Trp	Ser	Asn	Gly	His	Thr	Glu	
		115					120					125				
agc	atc	att	tcg	gaa	agc	cac	tct	gtc	atc	gtg	atg	tca	tcc	gta	gaa	432
Ser	Ile	Ile	Ser	Glu	Ser	His	Ser	Val	Ile	Val	Met	Ser	Ser	Val	Glu	
	130					135					140					
aac	agt	agg	cac	agc	agc	ccg	act	ggg	ggc	ccg	aga	gga	cgt	ctc	aat	480
Asn	Ser	Arg	His	Ser	Ser	Pro	Thr	Gly	Gly	Pro	Arg	Gly	Arg	Leu	Asn	
	145				150				155					160		
ggc	ttg	gga	ggc	cct	cgt	gaa	tgt	aac	agc	ttc	ctc	agg	cat	gcc	aga	528
Gly	Leu	Gly	Gly	Pro	Arg	Glu	Cys	Asn	Ser	Phe	Leu	Arg	His	Ala	Arg	
			165					170					175			
gaa	acc	cct	gac	tcc	tac	cga	gac	tct	cct	cat	agt	g	aaag			569
Glu	Thr	Pro	Asp	Ser	Tyr	Arg	Asp	Ser	Pro	His	Ser					
		180					185									

<210> 147
 <211> 730
 <212> DNA
 <213> Bos taurus

<220>
 <221> CDS

<222> (2)...(652)

<400> 147

g tat gta tca gca atg acc acc ccg gct cgt atg tca cct gta gat ttc	49
Tyr Val Ser Ala Met Thr Thr Pro Ala Arg Met Ser Pro Val Asp Phe	
1 5 10 15	
cac acg cca agc tcc ccc aag tca ccc cct tcg gaa atg tcc ccg ccc	97
His Thr Pro Ser Ser Pro Lys Ser Pro Pro Ser Glu Met Ser Pro Pro	
20 25 30	
gtg tcc agc acg acg gtc tcc atg ccc tcc atg gcg gtc agt ccc ttc	145
Val Ser Ser Thr Thr Val Ser Met Pro Ser Met Ala Val Ser Pro Phe	
35 40 45	
gtg gaa gag gag aga ccc ctg ctc ctt gtg acg cca cca cgg ctg cgg	193
Val Glu Glu Glu Arg Pro Leu Leu Leu Val Thr Pro Pro Arg Leu Arg	
50 55 60	
gag aag tat gac cac cac gcc cag caa ttc aac tcg ttc cac tgc aac	241
Glu Lys Tyr Asp His His Ala Gln Gln Phe Asn Ser Phe His Cys Asn	
65 70 75 80	
ccc gcg cat gag agc aac agc ctg ccc ccc agc ccc ttg agg ata gtg	289
Pro Ala His Glu Ser Asn Ser Leu Pro Pro Ser Pro Leu Arg Ile Val	
85 90 95	
gag gat gag gaa tat gaa acg acc cag gag tac gaa cca gct caa gag	337
Glu Asp Glu Glu Tyr Glu Thr Thr Gln Glu Tyr Glu Pro Ala Gln Glu	
100 105 110	
ccg gtt aag aaa ctc acc aac agc agc cgg cgg gcc aaa aga acc aag	385
Pro Val Lys Lys Leu Thr Asn Ser Ser Arg Arg Ala Lys Arg Thr Lys	
115 120 125	
ccc aat ggt cac att gcc cac agg ttg gaa atg gac aac aac aca ggc	433
Pro Asn Gly His Ile Ala His Arg Leu Glu Met Asp Asn Asn Thr Gly	
130 135 140	
gct gac agc agt aac tca gag agc gaa aca gag gat gaa aga gta gga	481
Ala Asp Ser Ser Asn Ser Glu Ser Glu Thr Glu Asp Glu Arg Val Gly	
145 150 155 160	
gaa gat acg cct ttc ctg gcc ata cag aac ccc ctg gca gcc agt ctc	529
Glu Asp Thr Pro Phe Leu Ala Ile Gln Asn Pro Leu Ala Ala Ser Leu	
165 170 175	
gag gcg gcc cct gcc ttc cgc ctg gtc gac agc agg act aac cca aca	577
Glu Ala Ala Pro Ala Phe Arg Leu Val Asp Ser Arg Thr Asn Pro Thr	
180 185 190	

ggc ggc ttc tct ccg cag gaa gaa ttg cag gcc agg ctc tcc ggt gta 625
 Gly Gly Phe Ser Pro Gln Glu Glu Leu Gln Ala Arg Leu Ser Gly Val
 195 200 205

atc gct aac caa gac cct atc gct gtc taaaaccgaa atacacccat 672
 Ile Ala Asn Gln Asp Pro Ile Ala Val
 210 215

agattcacct gtaaaacttt attttatata ataaagtatt ccaccttaaa ttaaacaa 730

<210> 148
 <211> 1652
 <212> DNA
 <213> Bos taurus

<220>
 <221> CDS
 <222> (459) ... (1181)

<400> 148

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 ggcggctgcc caggcgatgc gagcgcgggc cggacggtaa tcgcctctcc ctctcgggc 120
 tgcgagcgcg ccggaccgag gcagcgacag gagcggaccg cggcgggaaac cgaggactcc 180
 ccagcggcgc gccagcagga gccacccgc gagcgtgcga ccgggacgga gcgcccgcga 240
 gtcccagggtg gcccgggaccg cacgttgctg ccccgcgctc cccgcggcg acaggagacg 300
 ctcccccca cgccgcgcgc gcctcgcccc ggctcgctggc ccgcctccac tccggggaca 360
 aacttttccc gaagccgatc ccagccctcg gacccaaact tgcgcgcgt cgccttcgcc 420
 gggagccgctc cgcgcagagc gtgcacttct cgggcgag atg tcg gag cgc aga gaa 476
 Met Ser Glu Arg Arg Glu
 1 5

ggc aaa ggc aag ggc aag ggc ggc aag aag gac cga ggc tcc ggc aag 524
 Gly Lys Gly Lys Gly Lys Gly Gly Lys Lys Asp Arg Gly Ser Gly Lys
 10 15 20

aag ccc gtg ccc gcg gct ggc ggc ccg agc cca gcc ttg cct ccc cgc 572
 Lys Pro Val Pro Ala Ala Gly Gly Pro Ser Pro Ala Leu Pro Pro Arg
 25 30 35

ttg aaa gag atg aag atg cag gag tct gtg gca ggt tcc aaa cta gtg 620
 Leu Lys Glu Met Lys Met Gln Glu Ser Val Ala Gly Ser Lys Leu Val
 40 45 50

ctt cgg tgc gag acc agt tct gaa tac tcc tct ctc aag ttc aag tgg 668
 Leu Arg Cys Glu Thr Ser Ser Glu Tyr Ser Ser Leu Lys Phe Lys Trp
 55 60 65 70

ttc aag aat ggc agt gaa tta agc cga aag aac aaa cca caa aac atc 716
 Phe Lys Asn Gly Ser Glu Leu Ser Arg Lys Asn Lys Pro Gln Asn Ile
 75 80 85

aag ata cag aaa agg ccg ggg aag tca gaa ctt cgc att agc aaa gcg	764
Lys Ile Gln Lys Arg Pro Gly Lys Ser Glu Leu Arg Ile Ser Lys Ala	
90 95 100	
tca ctg gct gat tct gga gaa tat atg tgc aaa gtg atc agc aaa cta	812
Ser Leu Ala Asp Ser Gly Glu Tyr Met Cys Lys Val Ile Ser Lys Leu	
105 110 115	
gga aat gac agt gcc tct gcc aac atc acc att gtg gag tca aac gag	860
Gly Asn Asp Ser Ala Ser Ala Asn Ile Thr Ile Val Glu Ser Asn Glu	
120 125 130	
atc acc act ggc atg cca gcc tca act gag aca gcg tat gtg tct tca	908
Ile Thr Thr Gly Met Pro Ala Ser Thr Glu Thr Ala Tyr Val Ser Ser	
135 140 145 150	
gag tct ccc att aga ata tca gta tca aca gaa gga aca aat act tct	956
Glu Ser Pro Ile Arg Ile Ser Val Ser Thr Glu Gly Thr Asn Thr Ser	
155 160 165	
tca tcc aca tcc aca tct aca gct ggg aca agc cat ctt gtc aag tgt	1004
Ser Ser Thr Ser Thr Ser Thr Ala Gly Thr Ser His Leu Val Lys Cys	
170 175 180	
gca gag aag gag aaa act ttc tgt gtg aat gga ggc gag tgc ttc atg	1052
Ala Glu Lys Glu Lys Thr Phe Cys Val Asn Gly Gly Glu Cys Phe Met	
185 190 195	
gtg aaa gac ctt tca aat ccc tca aga tac ttg tgc aag tgc cca aat	1100
Val Lys Asp Leu Ser Asn Pro Ser Arg Tyr Leu Cys Lys Cys Pro Asn	
200 205 210	
gag ttt act ggt gat cgc tgc caa aac tac gta atg gcc agc ttc tac	1148
Glu Phe Thr Gly Asp Arg Cys Gln Asn Tyr Val Met Ala Ser Phe Tyr	
215 220 225 230	
agt acg tcc act ccc ttt ctg tct ctg cct gaa taggcgcgatg ctccagtcggt	1201
Ser Thr Ser Thr Pro Phe Leu Ser Leu Pro Glu	
235 240	
gccgctttct tgttgccgca tctccctca gattcaacct agagctagat gcgttttacc	1261
aggtctaaca ttgactgcct ctgcctgtcg catgagaaca ttaacacaag cgattgtatg	1321
acttccctctg tccgtgacta gtgggctctg agctactcgt aggtgcgtaa ggctccagtg	1381
tttctgaaat tgatcttgaa ttactgtgat acgacatgat agtccctctc acccagtgc	1441
atgacaataa aggccttgaa aagtctcact tttattgaga aaataaaaaat cgttccacgg	1501
gacagtcctt cttctttata aaatgacct atccttgaaa aggaggtgtg ttaagttgta	1561
accagtacac acttgaaatg atggtaagtt cgcttcggtt cagaatgtgt tctttctgac	1621
aaataaacag aataaaaaaa aaaaaaaaaa a	1652

<210> 149
<211> 1140

<212> DNA

<213> Bos taurus

<220>

<221> CDS

<222> (1)...(840)

<223> Xaa in position 2 is unknown.

<400> 149

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His	Xaa	Val	Trp	Ala	Ala	Lys	Ala	Gly	Gly	Leu	Lys	Lys	Asp	Ser	Leu	
1				5				10					15			

ctc	acc	gtg	cgc	ctg	ggc	gcc	tgg	ggc	cac	ccc	gcc	ttc	ccc	tcc	tgc	96
Leu	Thr	Val	Arg	Leu	Gly	Ala	Trp	Gly	His	Pro	Ala	Phe	Pro	Ser	Cys	
			20					25					30			

ggg	cgc	ctc	aag	gag	gac	agc	agg	tac	atc	ttc	ttc	atg	gag	ccc	gag	144
Gly	Arg	Leu	Lys	Glu	Asp	Ser	Arg	Tyr	Ile	Phe	Phe	Met	Glu	Pro	Glu	
		35					40					45				

gcc	aac	agc	agc	ggc	ggg	ccc	ggc	cgc	ctt	ccg	agc	ctc	ctt	ccc	ccc	192
Ala	Asn	Ser	Ser	Gly	Gly	Pro	Gly	Arg	Leu	Pro	Ser	Leu	Leu	Pro	Pro	
	50					55					60					

tct	cga	gac	ggg	ccg	gaa	cct	caa	gaa	gga	ggt	cag	ccg	ggt	gct	gtg	240
Ser	Arg	Asp	Gly	Pro	Glu	Pro	Gln	Glu	Gly	Gly	Gln	Pro	Gly	Ala	Val	
	65				70					75					80	

caa	cgg	tgc	gcc	ttg	cct	ccc	cgc	ttg	aaa	gag	atg	aag	agt	cag	gag	288
Gln	Arg	Cys	Ala	Leu	Pro	Pro	Arg	Leu	Lys	Glu	Met	Lys	Ser	Gln	Glu	
				85					90					95		

tct	gtg	gca	ggt	tcc	aaa	cta	gtg	ctt	cgg	tgc	gag	acc	agt	tct	gaa	336
Ser	Val	Ala	Gly	Ser	Lys	Leu	Val	Leu	Arg	Cys	Glu	Thr	Ser	Ser	Glu	
			100					105					110			

tac	tcc	tct	ctc	aag	ttc	aag	tgg	ttc	aag	aat	ggg	agt	gaa	tta	agc	384
Tyr	Ser	Ser	Leu	Lys	Phe	Lys	Trp	Phe	Lys	Asn	Gly	Ser	Glu	Leu	Ser	
			115				120					125				

cga	aag	aac	aaa	cca	gaa	aac	atc	aag	ata	cag	aaa	agg	ccg	ggg	aag	432
Arg	Lys	Asn	Lys	Pro	Glu	Asn	Ile	Lys	Ile	Gln	Lys	Arg	Pro	Gly	Lys	
	130					135				140						

tca	gaa	ctt	cgc	att	agc	aaa	gcg	tca	ctg	gct	gat	tct	gga	gaa	tat	480
Ser	Glu	Leu	Arg	Ile	Ser	Lys	Ala	Ser	Leu	Ala	Asp	Ser	Gly	Glu	Tyr	
	145				150				155					160		

atg	tgc	aaa	gtg	atc	agc	aaa	cta	gga	aat	gac	agt	gcc	tct	gcc	aac	528
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Met Cys Lys Val Ile Ser Lys Leu Gly Asn Asp Ser Ala Ser Ala Asn	
165 170 175	
atc acc att gtg gag tca aac gcc aca tcc aca tct aca gct ggg aca	576
Ile Thr Ile Val Glu Ser Asn Ala Thr Ser Thr Ser Thr Ala Gly Thr	
180 185 190	
agc cat ctt gtc aag tgt gca gag aag gag aaa act ttc tgt gtg aat	624
Ser His Leu Val Lys Cys Ala Glu Lys Glu Lys Thr Phe Cys Val Asn	
195 200 205	
gga ggc gag tgc ttc atg gtg aaa gac ctt tca aat ccc tca aga tac	672
Gly Gly Glu Cys Phe Met Val Lys Asp Leu Ser Asn Pro Ser Arg Tyr	
210 215 220	
ttg tgc aag tgc caa cct gga ttc act gga gcg aga tgt act gag aat	720
Leu Cys Lys Cys Gln Pro Gly Phe Thr Gly Ala Arg Cys Thr Glu Asn	
225 230 235 240	
gtg ccc atg aaa gtc caa acc caa gaa aag tgc cca aat gag ttt act	768
Val Pro Met Lys Val Gln Thr Gln Glu Lys Cys Pro Asn Glu Phe Thr	
245 250 255	
ggg gat cgc tgc caa aac tac gta atg gcc agc ttc tac agt acg tcc	816
Gly Asp Arg Cys Gln Asn Tyr Val Met Ala Ser Phe Tyr Ser Thr Ser	
260 265 270	
act ccc ttt ctg tct ctg cct gaa tagcgcacatc cagtcgggtgc cgctttcttg	870
Thr Pro Phe Leu Ser Leu Pro Glu	
275 280	
ttgccgcac tcacctcaga ttccncctag agctagatgc gttttaccag gtctaacatt	930
gactgcctct gcctgtcgca tgagaacatt aacacaagcg attgtatgac ttcctctgtc	990
cgtgactagt gggctctgag ctactcgtag gtgcgtaagg ctccagtgtt tctgaaattg	1050
atcttgaatt actgtgatac gacatgatag tccctctcac ccagtgcaat gacaataaag	1110
gccttgaaaa gtcaaaaaaa aaaaaaaaaa	1140
<210> 150	
<211> 1764	
<212> DNA	
<213> Bos taurus	
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<221> CDS	
<222> (2)...(1681)	
<400> 150	
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Lys Ser Glu Leu Arg Ile Ser Lys Ala Ser Leu Ala Asp Ser Gly Glu	
1 5 10 15	

tat atg tgc aaa gtg atc agc aaa cta gga aat gac agt gcc tct gcc	97
Tyr Met Cys Lys Val Ile Ser Lys Leu Gly Asn Asp Ser Ala Ser Ala	
20 25 30	
aac atc acc att gtg gag tca aac gcc aca tcc aca tct aca gct ggg	145
Asn Ile Thr Ile Val Glu Ser Asn Ala Thr Ser Thr Ser Thr Ala Gly	
35 40 45	
aca agc cat ctt gtc aag tgt gca gag aag gag aaa act ttc tgt gtg	193
Thr Ser His Leu Val Lys Cys Ala Glu Lys Glu Lys Thr Phe Cys Val	
50 55 60	
aat gga ggc gac tgc ttc atg gtg aaa gac ctt tca aat ccc tca aga	241
Asn Gly Gly Asp Cys Phe Met Val Lys Asp Leu Ser Asn Pro Ser Arg	
65 70 75 80	
tac ttg tgc aag tgc caa cct gga ttc act gga gcg aga tgt act gag	289
Tyr Leu Cys Lys Cys Gln Pro Gly Phe Thr Gly Ala Arg Cys Thr Glu	
85 90 95	
aat gtg ccc atg aaa gtc caa acc caa gaa aaa gcg gag gag ctc tac	337
Asn Val Pro Met Lys Val Gln Thr Gln Glu Lys Ala Glu Glu Leu Tyr	
100 105 110	
cag aag aga gtg ctc acc att acc ggc att tgc atc gcg ctg ctc gtg	385
Gln Lys Arg Val Leu Thr Ile Thr Gly Ile Cys Ile Ala Leu Leu Val	
115 120 125	
gtt ggc atc atg tgt gtg gtg gtc tac tgc aaa acc aag aaa caa cgg	433
Val Gly Ile Met Cys Val Val Val Tyr Cys Lys Thr Lys Lys Gln Arg	
130 135 140	
aaa aag ctt cat gac cgg ctt cgg cag agc ctt cgg tct gaa aga aac	481
Lys Lys Leu His Asp Arg Leu Arg Gln Ser Leu Arg Ser Glu Arg Asn	
145 150 155 160	
acc atg atg aac gta gcc aac ggg ccc cac cac ccc aat ccg ccc ccc	529
Thr Met Met Asn Val Ala Asn Gly Pro His His Pro Asn Pro Pro Pro	
165 170 175	
gag aac gtg cag ctg gtg aat caa tac gta tct aaa aat gtc atc tct	577
Glu Asn Val Gln Leu Val Asn Gln Tyr Val Ser Lys Asn Val Ile Ser	
180 185 190	
agc gag cat att gtt gag aga gag gcg gag agc tct ttt tcc acc agt	625
Ser Glu His Ile Val Glu Arg Glu Ala Glu Ser Ser Phe Ser Thr Ser	
195 200 205	
cac tac act tcg aca gct cat cat tcc act act gtc act cag act ccc	673
His Tyr Thr Ser Thr Ala His His Ser Thr Thr Val Thr Gln Thr Pro	
210 215 220	

agt Ser 225	cac His	agc Ser	tgg Trp	agc Ser	aat Asn 230	gga Gly	cac His	act Thr	gaa Glu	agc Ser 235	atc Ile	att Ile	tcg Ser	gaa Glu	agc Ser 240	721
cac His	tct Ser	gtc Val	atc Ile	gtg Val 245	atg Met	tca Ser	tcc Ser	gta Val	gaa Glu 250	aac Asn	agt Ser	agg Arg	cac His	agc Ser 255	agc Ser	769
ccg Pro	act Thr	ggg Gly	ggc Gly 260	ccg Pro	aga Arg	gga Gly	cgt Arg	ctc Leu 265	aat Asn	ggc Gly	ttg Leu	gga Gly	ggc Gly 270	cct Pro	cgt Arg	817
gaa Glu	tgt Cys	aac Asn 275	agc Ser	ttc Phe	ctc Leu	agg Arg	cat His 280	gcc Ala	aga Arg	gaa Glu	acc Thr	cct Pro 285	gac Asp	tcc Ser	tac Tyr	865
cga Arg	gac Asp 290	tct Ser	cct Pro	cat His	agt Ser	gaa Glu 295	aga Arg	cat His	aac Asn	ctt Leu	ata Ile 300	gct Ala	gag Glu	cta Leu	agg Arg	913
aga Arg 305	aac Asn	aag Lys	gcc Ala	cac His	aga Arg 310	tcc Ser	aaa Lys	tgc Cys	atg Met	cag Gln 315	atc Ile	cag Gln	ctt Leu	tcc Ser	gca Ala 320	961
act Thr	cat His	ctt Leu	aga Arg	gct Ala 325	tct Ser	tcc Ser	att Ile	ccc Pro	cat His 330	tgg Trp	gct Ala	tca Ser	ttc Phe	tct Ser 335	aag Lys	1009
acc Thr	cct Pro	tgg Trp	cct Pro 340	tta Leu	gga Gly	agg Arg	tat Tyr	gta Val 345	tca Ser	gca Ala	atg Met	acc Thr	acc Thr 350	ccg Pro	gct Ala	1057
cgt Arg	atg Met	tca Ser 355	cct Pro	gta Val	gat Asp	ttc Phe	cac His 360	acg Thr	cca Pro	agc Ser	tcc Ser	ccc Pro 365	aag Lys	tca Ser	ccc Pro	1105
cct Pro	tcg Ser 370	gaa Glu	atg Met	tcc Ser	ccg Pro	ccc Pro	gtg Val 375	tcc Ser	agc Ser	acg Thr	acg Thr 380	gtc Val	tcc Ser	atg Met	ccc Pro	1153
tcc Ser 385	atg Met	gcg Ala	gtc Val	agt Ser	ccc Pro 390	ttc Phe	gtg Val	gaa Glu	gag Glu	gag Glu 395	aga Arg	ccc Pro	ctg Leu	ctc Leu	ctt Leu 400	1201
gtg Val	acg Thr	cca Pro	cca Pro	cgg Arg 405	ctg Leu	cgg Arg	gag Glu	aag Lys	tat Tyr 410	gac Asp	cac His	cac His	gcc Ala	cag Gln 415	caa Gln	1249
ttc Phe	aac Asn	tcg Ser	ttc Phe	cac His	tgc Cys	aac Asn	ccc Pro	gcg Ala	cat His	gag Glu	agc Ser	aac Asn	agc Ser	ctg Leu	ccc Pro	1297

420	425	430	
ccc agc ccc ttg agg ata gtg gag gat gag gaa tat gaa acg acc cag			1345
Pro Ser Pro Leu Arg Ile Val Glu Asp Glu Glu Tyr Glu Thr Thr Gln			
435	440	445	
gag tac gaa cca gct caa gag ccg gtt aag aaa ctc acc aac agc agc			1393
Glu Tyr Glu Pro Ala Gln Glu Pro Val Lys Lys Leu Thr Asn Ser Ser			
450	455	460	
cgg cgg gcc aaa aga acc aag ccc aat ggt cac att gcc cac agg ttg			1441
Arg Arg Ala Lys Arg Thr Lys Pro Asn Gly His Ile Ala His Arg Leu			
465	470	475	480
gaa atg gac aac aac aca ggc gct gac agc agt aac tca gag agc gaa			1489
Glu Met Asp Asn Asn Thr Gly Ala Asp Ser Ser Asn Ser Glu Ser Glu			
485	490	495	
aca gag gat gaa aga gta gga gaa gat acg cct ttc ctg gcc ata cag			1537
Thr Glu Asp Glu Arg Val Gly Glu Asp Thr Pro Phe Leu Ala Ile Gln			
500	505	510	
aac ccc ctg gca gcc agt ctc gag gcg gcc cct gcc ttc cgc ctg gtc			1585
Asn Pro Leu Ala Ala Ser Leu Glu Ala Ala Pro Ala Phe Arg Leu Val			
515	520	525	
gac agc agg act aac cca aca ggc ggc ttc tct ccg cag gaa gaa ttg			1633
Asp Ser Arg Thr Asn Pro Thr Gly Gly Phe Ser Pro Gln Glu Glu Leu			
530	535	540	
cag gcc agg ctc tcc ggt gta atc gct aac caa gac cct atc gct gtc			1681
Gln Ala Arg Leu Ser Gly Val Ile Ala Asn Gln Asp Pro Ile Ala Val			
545	550	555	560
taaaaccgaa atacacccat agattcacct gtaaaacttt attttatata ataaagtatt			1741
ccaccttaaa ttaaacaataaaa aaa			1764

<210> 151
 <211> 50
 <212> PRT
 <213> Bos taurus

<400> 151
 Lys Cys Ala Glu Lys Glu Lys Thr Phe Cys Val Asn Gly Gly Glu Cys
 1 5 10 15
 Phe Met Val Lys Asp Leu Ser Asn Pro Ser Arg Tyr Leu Cys Lys Cys
 20 25 30
 Pro Asn Glu Phe Thr Gly Asp Arg Cys Gln Asn Tyr Val Met Ala Ser
 35 40 45
 Phe Tyr
 50

<210> 152
 <211> 50
 <212> PRT
 <213> Bos taurus

<400> 152
 Lys Cys Ala Glu Lys Glu Lys Thr Phe Cys Val Asn Gly Gly Glu Cys
 1 5 10 15
 Phe Met Val Lys Asp Leu Ser Asn Pro Ser Arg Tyr Leu Cys Lys Cys
 20 25 30
 Gln Pro Gly Phe Thr Gly Ala Arg Cys Thr Glu Asn Val Pro Met Lys
 35 40 45
 Val Gln
 50

<210> 153
 <211> 46
 <212> PRT
 <213> Homo sapiens

<400> 153
 Glu Cys Leu Arg Lys Tyr Lys Asp Phe Cys Ile His Gly Glu Cys Lys
 1 5 10 15
 Tyr Val Lys Glu Leu Arg Ala Pro Ser Cys Lys Cys Gln Gln Glu Tyr
 20 25 30
 Phe Gly Glu Arg Cys Gly Glu Lys Ser Asn Lys Thr His Ser
 35 40 45

<210> 154
 <211> 198
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1)...(198)

<400> 154
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 Ser His Leu Val Lys Cys Ala Glu Lys Glu Lys Thr Phe Cys Val Asn
 1 5 10 15
 gga ggc gag tgc ttc atg gtg aaa gac ctt tca aat ccc tca aga tac 96
 Gly Gly Glu Cys Phe Met Val Lys Asp Leu Ser Asn Pro Ser Arg Tyr
 20 25 30
 ttg tgc aag tgc cca aat gag ttt act ggt gat cgc tgc caa aac tac 144
 Leu Cys Lys Cys Pro Asn Glu Phe Thr Gly Asp Arg Cys Gln Asn Tyr
 35 40 45
 gta atg gcc agc ttc tac agt acg tcc act ccc ttt ctg tct ctg cct 192

Val Met Ala Ser Phe Tyr Ser Thr Ser Thr Pro Phe Leu Ser Leu Pro
 50 55 60

gaa tag 198
 Glu *
 65

<210> 155
 <211> 192
 <212> DNA
 <213> Bos taurus

<220>
 <221> CDS
 <222> (1)...(189)

<400> 155
 agc cat ctt gtc aag tgt gca gag aag gag aaa act ttc tgt gtg aat 48
 Ser His Leu Val Lys Cys Ala Glu Lys Glu Lys Thr Phe Cys Val Asn
 1 5 10 15

gga ggc gag tgc ttc atg gtg aaa gac ctt tca aat ccc tca aga tac 96
 Gly Gly Glu Cys Phe Met Val Lys Asp Leu Ser Asn Pro Ser Arg Tyr
 20 25 30

ttg tgc aag tgc caa cct gga ttc act gga gcg aga tgt act gag aat 144
 Leu Cys Lys Cys Gln Pro Gly Phe Thr Gly Ala Arg Cys Thr Glu Asn
 35 40 45

gtg ccc atg aaa gtc caa acc caa gaa aaa gcg gag gag ctc tac 189
 Val Pro Met Lys Val Gln Thr Gln Glu Lys Ala Glu Glu Leu Tyr
 50 55 60

taa 192

<210> 156
 <211> 183
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1)...(180)

<400> 156
 agc cat ctt gtc aag tgt gca gag aag gag aaa act ttc tgt gtg aat 48
 Ser His Leu Val Lys Cys Ala Glu Lys Glu Lys Thr Phe Cys Val Asn
 1 5 10 15

gga ggc gag tgc ttc atg gtg aaa gac ctt tca aat ccc tca aga tac 96

Gly	Gly	Glu	Cys	Phe	Met	Val	Lys	Asp	Leu	Ser	Asn	Pro	Ser	Arg	Tyr	
			20					25					30			
ttg	tgc	aag	tgc	cca	aat	gag	ttt	act	ggg	gat	cgc	tgc	caa	aac	tac	144
Leu	Cys	Lys	Cys	Pro	Asn	Glu	Phe	Thr	Gly	Asp	Arg	Cys	Gln	Asn	Tyr	
		35					40					45				
gta	atg	gcc	agc	ttc	tac	aaa	gcg	gag	gag	ctc	tac	taa				183
Val	Met	Ala	Ser	Phe	Tyr	Lys	Ala	Glu	Glu	Leu	Tyr					
	50					55					60					

<210> 157																
<211> 210																
<212> DNA																
<213> Homo sapiens																
<220>																
<221> CDS																
<222> (1) ... (207)																
<400> 157																
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Ser	His	Leu	Val	Lys	Cys	Ala	Glu	Lys	Glu	Lys	Thr	Phe	Cys	Val	Asn	
1				5				10					15			
gga	ggc	gag	tgc	ttc	atg	gtg	aaa	gac	ctt	tca	aat	ccc	tca	aga	tac	96
Gly	Gly	Glu	Cys	Phe	Met	Val	Lys	Asp	Leu	Ser	Asn	Pro	Ser	Arg	Tyr	
			20					25				30				
ttg	tgc	aag	tgc	cca	aat	gag	ttt	act	ggg	gat	cgc	tgc	caa	aac	tac	144
Leu	Cys	Lys	Cys	Pro	Asn	Glu	Phe	Thr	Gly	Asp	Arg	Cys	Gln	Asn	Tyr	
		35					40					45				
gta	atg	gcc	agc	ttc	tac	aag	cat	ctt	ggg	att	gaa	ttt	atg	gag	aaa	192
Val	Met	Ala	Ser	Phe	Tyr	Lys	His	Leu	Gly	Ile	Glu	Phe	Met	Glu	Lys	
	50					55					60					
gcg	gag	gag	ctc	tac	taa											210
Ala	Glu	Glu	Leu	Tyr												
	65															

<210> 158															
<211> 267															
<212> DNA															
<213> Bos taurus															
<220>															
<221> CDS															
<222> (1) ... (264)															

<400> 158

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Ser His Leu Val Lys Cys Ala Glu Lys Glu Lys Thr Phe Cys Val Asn	
1 5 10 15	

gga ggc gag tgc ttc atg gtg aaa gac ctt tca aat ccc tca aga tac	96
Gly Gly Glu Cys Phe Met Val Lys Asp Leu Ser Asn Pro Ser Arg Tyr	
20 25 30	

ttg tgc aag tgc caa cct gga ttc act gga gcg aga tgt act gag aat	144
Leu Cys Lys Cys Gln Pro Gly Phe Thr Gly Ala Arg Cys Thr Glu Asn	
35 40 45	

gtg ccc atg aaa gtc caa acc caa gaa aag tgc cca aat gag ttt act	192
Val Pro Met Lys Val Gln Thr Gln Glu Lys Cys Pro Asn Glu Phe Thr	
50 55 60	

ggt gat cgc tgc caa aac tac gta atg gcc agc ttc tac agt acg tcc	240
Gly Asp Arg Cys Gln Asn Tyr Val Met Ala Ser Phe Tyr Ser Thr Ser	
65 70 75 80	

act ccc ttt ctg tct ctg cct gaa tag	267
Thr Pro Phe Leu Ser Leu Pro Glu	
85	

<210> 159
 <211> 252
 <212> DNA
 <213> Bos taurus

<220>
 <221> CDS
 <222> (1)... (249)

<400> 159

agc cat ctt gtc aag tgt gca gag aag gag aaa act ttc tgt gtg aat	48
Ser His Leu Val Lys Cys Ala Glu Lys Glu Lys Thr Phe Cys Val Asn	
1 5 10 15	

gga ggc gag tgc ttc atg gtg aaa gac ctt tca aat ccc tca aga tac	96
Gly Gly Glu Cys Phe Met Val Lys Asp Leu Ser Asn Pro Ser Arg Tyr	
20 25 30	

ttg tgc aag tgc caa cct gga ttc act gga gcg aga tgt act gag aat	144
Leu Cys Lys Cys Gln Pro Gly Phe Thr Gly Ala Arg Cys Thr Glu Asn	
35 40 45	

gtg ccc atg aaa gtc caa acc caa gaa aag tgc cca aat gag ttt act	192
Val Pro Met Lys Val Gln Thr Gln Glu Lys Cys Pro Asn Glu Phe Thr	
50 55 60	

ggt gat cgc tgc caa aac tac gta atg gcc agc ttc tac aaa gcg gag 240
 Gly Asp Arg Cys Gln Asn Tyr Val Met Ala Ser Phe Tyr Lys Ala Glu
 65 70 75 80

gag ctc tac taa 252
 Glu Leu Tyr

<210> 160
 <211> 128
 <212> DNA
 <213> Bos taurus

<220>
 <221> CDS
 <222> (3)...(125)

<400> 160
 cc aca tcc aca tct aca gct ggg aca agc cat ctt gtc aag tgt gca 47
 Thr Ser Thr Ser Thr Ala Gly Thr Ser His Leu Val Lys Cys Ala
 1 5 10 15

gag aag gag aaa act ttc tgt gtg aat gga ggc gag tgc ttc atg gtg 95
 Glu Lys Glu Lys Thr Phe Cys Val Asn Gly Gly Glu Cys Phe Met Val
 20 25 30

aaa gac ctt tca aat ccc tca aga tac ttg tgc 128
 Lys Asp Leu Ser Asn Pro Ser Arg Tyr Leu
 35 40

<210> 161
 <211> 142
 <212> DNA
 <213> Bos taurus

<220>
 <221> CDS
 <222> (2)...(142)

<221> variation
 <222> (142)...(142)
 <223> N in position 142 is g or absent.

<221> variation
 <222> (47)...(47)
 <223> Xaa in position 47 is Arg or absent.

<400> 161

a cat aac ctt ata gct gag cta agg aga aac aag gcc cac aga tcc aaa 49
 His Asn Leu Ile Ala Glu Leu Arg Arg Asn Lys Ala His Arg Ser Lys
 1 5 10 15

tgc atg cag atc cag ctt tcc gca act cat ctt aga gct tct tcc att 97
 Cys Met Gln Ile Gln Leu Ser Ala Thr His Leu Arg Ala Ser Ser Ile
 20 25 30

ccc cat tgg gct tca ttc tct aag acc cct tgg cct tta gga agn 142
 Pro His Trp Ala Ser Phe Ser Lys Thr Pro Trp Pro Leu Gly Xaa
 35 40 45

<210> 162
 <211> 24
 <212> PRT
 <213> Homo sapiens

<220>
 <221> UNSURE
 <222> (15)...(22)
 <223> Xaa in 15 and 22 is unknown.

<400> 162
 Ala Ala Glu Lys Glu Lys Thr Phe Cys Val Asn Gly Gly Glu Xaa Phe
 1 5 10 15
 Met Val Lys Asp Leu Xaa Asn Pro
 20

<210> 163
 <211> 745
 <212> DNA
 <213> Homo sapiens

<220>
 <221> CDS
 <222> (1)...(744)

<400> 163
 atg aga tgg cga cgc gcc ccg cgc cgc tcc ggg cgt ccc ggc ccc cgg 48
 Met Arg Trp Arg Arg Ala Pro Arg Arg Ser Gly Arg Pro Gly Pro Arg
 1 5 10 15

gcc cag cgc ccc ggc tcc gcc gcc cgc tcg tcg ccg ccg ctg ccg ctg 96
 Ala Gln Arg Pro Gly Ser Ala Ala Arg Ser Ser Pro Pro Leu Pro Leu
 20 25 30

ctg cca cta ctg ctg ctg ctg ggg acc gcg gcc ctg gcg ccg ggg gcg 144
 Leu Pro Leu Leu Leu Leu Leu Gly Thr Ala Ala Leu Ala Pro Gly Ala
 35 40 45

gcg gcc ggc aac gag gcg gct ccc gcg ggg gcc tcg gtg tgc tac tcg	192
Ala Ala Gly Asn Glu Ala Ala Pro Ala Gly Ala Ser Val Cys Tyr Ser	
50 55 60	
tcc ccg ccc agc gtg gga tcg gtg cag gag cta gct cag cgc gcc gcg	240
Ser Pro Pro Ser Val Gly Ser Val Gln Glu Leu Ala Gln Arg Ala Ala	
65 70 75 80	
gtg gtg atc gag gga aag gtg cac ccg cag cgg cgg cag cag ggg gca	288
Val Val Ile Glu Gly Lys Val His Pro Gln Arg Arg Gln Gln Gly Ala	
85 90 95	
ctc gac agg aag gcg gcg gcg gcg gcg ggc gag gca ggg gcg tgg ggc	336
Leu Asp Arg Lys Ala Ala Ala Ala Ala Gly Glu Ala Gly Ala Trp Gly	
100 105 110	
ggc gat cgc gag ccg cca gcc gcg ggc cca cgg gcg ctg ggg ccg ccc	384
Gly Asp Arg Glu Pro Pro Ala Ala Gly Pro Arg Ala Leu Gly Pro Pro	
115 120 125	
gcc gag gag ccg ctg ctc gcc gcc aac ggg acc gtg ccc tct tgg ccc	432
Ala Glu Glu Pro Leu Leu Ala Ala Asn Gly Thr Val Pro Ser Trp Pro	
130 135 140	
acc gcc ccg gtg ccc agc gcc ggc gag ccc ggg gag gag gcg ccc tat	480
Thr Ala Pro Val Pro Ser Ala Gly Glu Pro Gly Glu Glu Ala Pro Tyr	
145 150 155 160	
ctg gtg aag gtg cac cag gtg tgg gcg gtg aaa gcc ggg ggc ttg aag	528
Leu Val Lys Val His Gln Val Trp Ala Val Lys Ala Gly Gly Leu Lys	
165 170 175	
aag gac tcg ctg ctc acc gtg cgc ctg ggg acc tgg ggc cac ccc gcc	576
Lys Asp Ser Leu Leu Thr Val Arg Leu Gly Thr Trp Gly His Pro Ala	
180 185 190	
ttc ccc tcc tgc ggg agg ctc aag gag gac agc agg tac atc ttc ttc	624
Phe Pro Ser Cys Gly Arg Leu Lys Glu Asp Ser Arg Tyr Ile Phe Phe	
195 200 205	
atg gag ccc gac gcc aac agc acc agc cgc gcg ccg gcc gcc ttc cga	672
Met Glu Pro Asp Ala Asn Ser Thr Ser Arg Ala Pro Ala Ala Phe Arg	
210 215 220	
gcc tct ttc ccc cct ctg gag acg ggc cgg aac ctc aag aag gag gtc	720
Ala Ser Phe Pro Pro Leu Glu Thr Gly Arg Asn Leu Lys Lys Glu Val	
225 230 235 240	
agc cgg gtg ctg tgc aag cgg tgc g	745
Ser Arg Val Leu Cys Lys Arg Cys	
245	

<210> 164
<211> 12
<212> PRT
<213> Homo sapiens

<220>
<221> UNSURE
<222> (1)...(1)
<223> Xaa in 1 is unknown.

<400> 164
Xaa Ala Leu Ala Ala Ala Gly Tyr Asp Val Glu Lys
1 5 10

<210> 165
<211> 5
<212> PRT
<213> Homo sapiens

<220>
<221> UNSURE
<222> (1)...(1)
<223> Xaa in 1 is unknown.

<400> 165
Xaa Leu Val Leu Arg
1 5

<210> 166
<211> 11
<212> PRT
<213> Homo sapiens

<220>
<221> UNSURE
<222> (1)...(3)
<223> Xaa in 1, 2, and 3 is unknown.

<400> 166
Xaa Xaa Xaa Tyr Pro Gly Gln Ile Thr Ser Asn
1 5 10

<210> 167
<211> 60
<212> DNA
<213> Artificial Sequence

<220>
<223> Probe/primer derived from Rattus rattus

<221> unsure
 <222> (25)...(31)
 <223> N in 25 and 31 is unknown.

<400> 167
 ataggggaagg gcgggggaag ggtcnccctc ngcagggccg ggcttgccctc tggagcctct 60

<210> 168
 <211> 18
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Probe/primer derived from Rattus rattus

<221> unsure
 <222> (16)...(16)
 <223> N in 16 is unknown.

<400> 168
 tttacacata tattcncc 18

<210> 169
 <211> 21
 <212> PRT
 <213> Bos taurus

<400> 169
 Glu Thr Gln Pro Asp Pro Gly Gln Ile Leu Lys Lys Val Pro Met Val
 1 5 10 15
 Ile Gly Ala Tyr Thr
 20

<210> 170
 <211> 422
 <212> PRT
 <213> Homo sapiens

<400> 170
 Met Arg Trp Arg Arg Ala Pro Arg Arg Ser Gly Arg Pro Gly Pro Arg
 1 5 10 15
 Ala Gln Arg Pro Gly Ser Ala Ala Arg Ser Ser Pro Pro Leu Pro Leu
 20 25 30
 Leu Pro Leu Leu Leu Leu Gly Thr Ala Ala Leu Ala Pro Gly Ala
 35 40 45
 Ala Ala Gly Asn Glu Ala Ala Pro Ala Gly Ala Ser Val Cys Tyr Ser
 50 55 60
 Ser Pro Pro Ser Val Gly Ser Val Gln Glu Leu Ala Gln Arg Ala Ala
 65 70 75 80
 Val Val Ile Glu Gly Lys Val His Pro Gln Arg Arg Gln Gln Gly Ala
 85 90 95

Glu Arg Gly Ser Gly Lys Lys Pro Glu Ser Ala Ala Gly Ser Gln Ser
20 25 30
Pro Arg Glu Ile Ile Thr Gly Met Pro Ala Ser Thr Glu Gly Ala Tyr
35 40 45
Val Ser Ser Glu Ser Pro Ile Arg Ile Ser Val Ser Thr Glu Gly Ala
50 55 60
Asn Thr Ser Ser Ser
65

<210> 172
<211> 19
<212> PRT
<213> Bos taurus

<400> 172
Arg Lys Gly Asp Val Pro Gly Pro Arg Val Lys Ser Ser Arg Ser Thr
1 5 10 15
Thr Thr Ala

<210> 173
<211> 231
<212> DNA
<213> Homo sapiens

<400> 173
cgcgagcgcc tcagcgcggc cgctcgctct cccctcgag ggacaaactt ttcccaaacc 60
cgatccgagc ccttggaacca aactcgctg cgccgagagc cgtccgcgta gagcgctccg 120
tctccggcga gatgtccgag cgcaaagaag gcagaggcaa aggggaagggc aagaagaagg 180
agcgaggctc cggcaagaag ccggagtccg cggcgggcag ccagagccca g 231

<210> 174
<211> 178
<212> DNA
<213> Homo sapiens

<400> 174
ccttgctcc ccgattgaaa gagatgaaaa gccaggaatc ggctgcaggt tccaaactag 60
tccttcgggtg tgaaaccagt tctgaatact cctctctcag attcaagtgg ttcaagaatg 120
ggaatgaatt gaatcgaaaa aacaaaccac aaaatatcaa gatacaaaaa aagccagg 178

<210> 175
<211> 122
<212> DNA
<213> Homo sapiens

<400> 175
gaagtcagaa cttcgcatta acaaagcatc actggctgat tctggagagt atatgtgcaa 60
agtgatcagc aaattaggaa atgacagtgc ctctgccaat atcaccatcg tggaatcaaa 120
cg 122

<210> 176
 <211> 102
 <212> DNA
 <213> Homo sapiens

 <400> 176
 agatcatcac tggatatgcca gctcaactg aaggagcata tgtgtcttca gagtctocca 60
 ttagaatatc agtatccaca gaaggagcaa atactttcttc at 102

 <210> 177
 <211> 128
 <212> DNA
 <213> Homo sapiens

 <400> 177
 ctacatctac atccaccact gggacaagcc atcttgtaaa atgtgctggag aaggagaaaa 60
 ctttctgtgt gaatggaggg gagtgcttca tggtgaaaga cctttcaaac ccctcgagat 120
 acttgtgc 128

 <210> 178
 <211> 69
 <212> DNA
 <213> Homo sapiens

 <400> 178
 aagtgccaac ctggattcac tggagcaaga tgtactgaga atgtgcccac gaaagtccaa 60
 aaccaagaa 69

 <210> 179
 <211> 23
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Probe derived from Bos taurus

 <400> 179
 tcgggctcca tgaagaagat gta 23

 <210> 180
 <211> 23
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Probe derived from Bos taurus

 <400> 180
 tccatgaaga agatgtacct gct 23

 <210> 181

<211> 22
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Probe derived from Bos taurus

 <400> 181
 atgtacctgc tgcctcctt ga 22

 <210> 182
 <211> 22
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Probe derived from Bos taurus

 <400> 182
 ttgaagaagg actcgctgct ca 22

 <210> 183
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Probe derived from Bos taurus

 <400> 183
 aaagccgggg gcttgaagaa 20

 <210> 184
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> Probe derived from Bos taurus

 <400> 184
 atgargtgtg ggcggcgaaa 20

 <210> 185
 <211> 15
 <212> PRT
 <213> Bos taurus

 <400> 185
 Glu Gly Lys Val His Pro Gln Arg Arg Gly Ala Leu Asp Arg Lys
 1 5 10 15

<210> 186
 <211> 17
 <212> PRT
 <213> Bos taurus

<400> 186
 Pro Ser Cys Gly Arg Leu Lys Glu Asp Ser Arg Tyr Ile Phe Phe Met
 1 5 10 15
 Glu

<210> 187
 <211> 16
 <212> PRT
 <213> Bos taurus

<400> 187
 Glu Leu Asn Arg Lys Asn Lys Pro Gln Asn Ile Lys Ile Gln Lys Lys
 1 5 10 15

<210> 188
 <211> 62
 <212> PRT
 <213> Homo sapiens

<400> 188
 Thr Ser Thr Ser Thr Thr Gly Thr Ser His Leu Val Lys Cys Ala Glu
 1 5 10 15
 Lys Glu Lys Thr Phe Cys Val Asn Gly Gly Glu Cys Phe Met Val Lys
 20 25 30
 Asp Leu Ser Asn Pro Ser Arg Tyr Leu Cys Lys Cys Pro Asn Glu Phe
 35 40 45
 Thr Gly Asp Arg Cys Gln Asn Tyr Val Met Ala Ser Phe Tyr
 50 55 60

<210> 189
 <211> 73
 <212> PRT
 <213> Homo sapiens

<400> 189
 Thr Ser Thr Ser Thr Thr Gly Thr Ser His Leu Val Lys Cys Ala Glu
 1 5 10 15
 Lys Glu Lys Thr Phe Cys Val Asn Gly Gly Glu Cys Phe Met Val Lys
 20 25 30
 Asp Leu Ser Asn Pro Ser Arg Tyr Leu Cys Lys Cys Pro Asn Glu Phe
 35 40 45
 Thr Gly Asp Arg Cys Gln Asn Tyr Val Met Ala Ser Phe Tyr Ser Thr
 50 55 60
 Ser Thr Pro Phe Leu Ser Leu Pro Glu
 65 70

<210> 190
 <211> 50
 <212> PRT
 <213> Homo sapiens

<400> 190
 Lys Cys Ala Glu Lys Glu Lys Thr Phe Cys Val Asn Gly Gly Glu Cys
 1 5 10 15
 Phe Met Val Lys Asp Leu Ser Asn Pro Ser Arg Tyr Leu Cys Lys Cys
 20 25 30
 Pro Asn Glu Phe Thr Gly Asp Arg Cys Gln Asn Tyr Val Met Ala Ser
 35 40 45
 Phe Tyr
 50

<210> 191
 <211> 150
 <212> DNA
 <213> Bos taurus

<400> 191
 aagtgtgcag agaaggagaa aactttctgt gtgaatggag gcgactgctt catggtgaaa 60
 gacctttcaa atccctcaag atacttgtgc aagtgccaac ctggattcac tggagcgaga 120
 tgtactgaga atgtgcccac gaaagtccaa 150

<210> 192
 <211> 11
 <212> PRT
 <213> Bos taurus

<400> 192
 Lys Ala Ser Leu Ala Asp Ser Gly Glu Tyr Met
 1 5 10

E!
 cont